The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

VOL. 23. NO. 30 TULSA, OKLAHOMA, DECEMBER 18, 1924

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Wortham May Reach 75,000 bbls. Jan. 1

Average daily production in United States week ended Dec. 13, 1,957,183 bbls. Gain from previous week, 1,848 bbls.

Output of 200,000 bbls. Daily Seems Probable Within Near Future. California Shows Another Gain

Highest daily average estimated production this year, week ended August 23, 2,057,319 bbls. Lowest January 12, 1,871,143 bbls.

By Andrew M. Rowley

The Wortham Pool in East Central Texas may attain a production of 75,000 barrels a day by the close of this month and by the middle of January may be well on its way to a peak now estimated at around 200,000 barrels. This opinion is based upon developments in the field during the past week. The bringing in of the well of Robert R. Penn and the Atlantic Oil Producing Company on Saturday with an estimated flow the first 24 hours of around 8,300 barrels and the completion of the Kirby Petroleum Company's test with a production at the start of close to 8,000 barrels daily, added to the extent of the pool and makes other wells drilling in the vicinity almost sure big producers. On Monday of this week E. L. Smith completed his No. 1 Beall, an offset to the Kirby well, and it started at a rate of 298 barrels an hour.

A well can be completed in the Wortham Field in 18 days. When it is considered there were 75 wells drilling and 93 derricks erected last Saturday, it is not hard to visualize what may be expected within the next few weeks. It is probable two other wells will be completed in the field before the end of this week. A much larger number should be brought in next week. Then completions probably will be recorded rapidly.

The five wells already producing in the field, which is less than a month old, had a total output early this week of approximately 30,000 barrels a day. The Penn well, completed Saturday, did not figure much in the average weekly production of the field as shown in the accompanying table and the Kirby well produced only a part of the week, which accounts for the average output last week of only 9,300 barrels. The average daily production for the field this week should be somewhere around 30,000 barrels a day as completions expected the end of the week doubtless will more than offset declines in output of wells now producing.

The Wortham Field is easily the outstanding feature of the crude oil situation at this time. Early predictions made as to the field's importance are being verified as wells are completed. The peak may not be reached until sometime in February, possibly not until the first of March, or it may come sooner. Conservative operators believe the peak will be at least 200,000 barrels a day. Pipe line facilities already in the field can care for 160,000 barrels a day and there seems little doubt but that production will amount to that much within the next month or so. The crude tests 40 gravity, with a straight run gasoline recovery of 29.3 per cent; kerosene, 28.7 per cent, and 41 per cent fuel oil.

While chief interest in the Mid-Continent section at least was centered in Wortham, California registered another increase in production, again going above the 600,000-barrel-a-day mark. The output of California has shown an increase in production averaging 13,500 barrels daily during the past two weeks. The Dominguez Field is living up to predictions made for it several weeks ago and, as has been stated in these columns before, will go a long way towards checking any decline in California's output for some time. The Associated Oil Company brought in a well in that field making 6,000 barrels and is expected to complete several other good producers within a short time. In the Rosecrans Field in California, the Barnsdall and Union Oil Companies added 2,595 barrels of new production with a well each during the past week.

In Oklahoma, a new high record was established for production from the deep sand area of the Tonkawa Field, that horizon producing 89,424 barrels during the 24 hours ending last Wednesday morning. Increases in production for the week were shown by Cromwell and the Papoose Pools. In the North Central Texas area, the Texon Oil & Land Company's No. 2 Group 1 University in Reagan County was flowing 3,000 barrels, the well extending the producing area slightly to the east. A new producing horizon was discovered in the South Vernon Pool in North Texas when Bridwell & Heydrick completed a 300-barrel well at 1,824 feet.

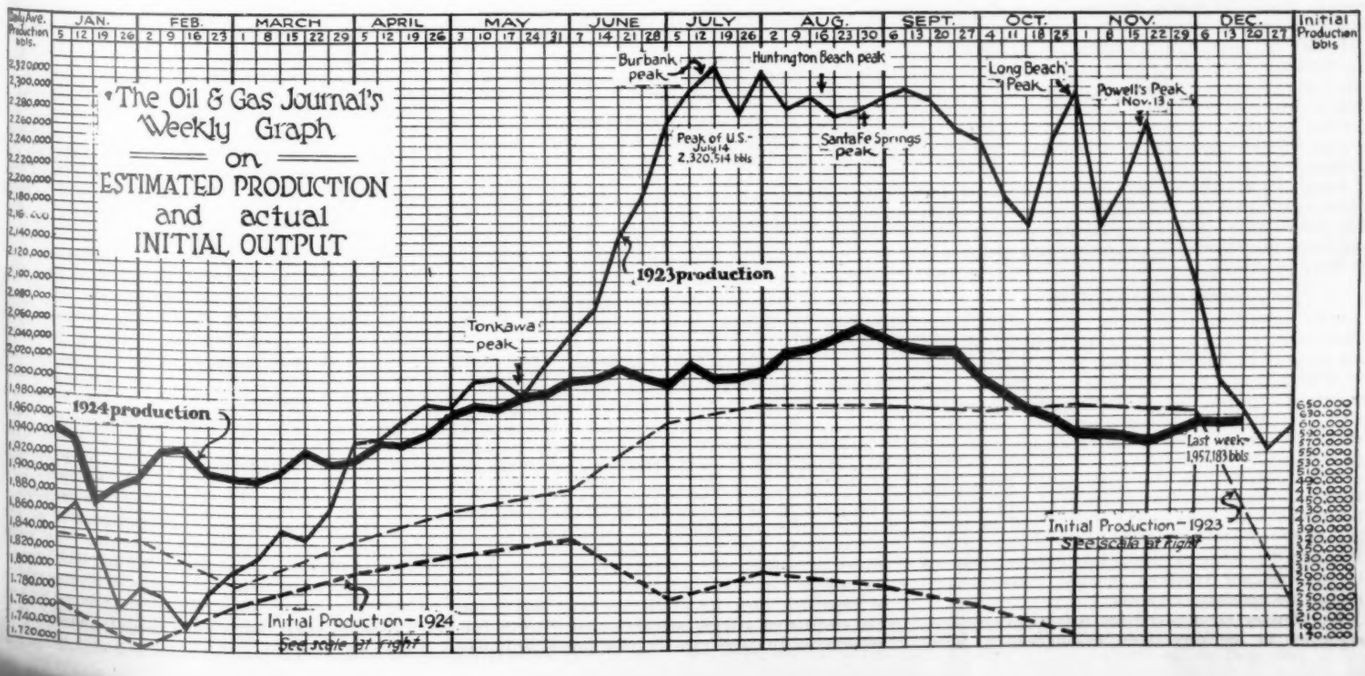
Production of crude oil at the end of last week was practically the same as the estimated output for the similar period last year. At that time, however, production had been decreasing rapidly. Now, with Wortham, it will show substantial increases for at least another month or six weeks. Wortham certainly will have a deterrent effect upon crude price advances. It may not stop advances being made in certain sections where local conditions affect the market but it most assuredly will cause the major purchasing companies to hesitate before announcing general increases in prices.

PRODUCTION IN THE UNITED STATES

Estimated daily average crude oil production in the United States for the week ended December 13, and a comparison with previous week follows:

	Dec. 13	Dec. 6
Oklahoma—Northern Fields:		
Tonkawa	106,155	108,220
Burbank	70,790	71,470
Other Osage Fields	40,205	40,330
Cushing and Shamrock	23,600	23,620
Bristow and Eastern Bristow	39,130	39,340
Cromwell	46,890	45,040
Papoose	31,780	29,470
Northern Miscellaneous	100,125	100,540
Southern Fields	67,960	67,985
Total Oklahoma	526,635	526,015
North Louisiana	51,593	55,475
Arkansas—		
El Dorado and Calion	10,685	10,690
Smackover Light	29,592	30,665
Smackover Heavy	66,565	66,670
Stephens and Nevada	3,480	3,575
Total Arkansas	110,322	111,600
North Central Texas	132,985	134,431
Powell	68,200	68,100
Mexia, Currie, Richland, etc.	49,400	49,260
Wortham	9,300	6,970
Kansas	87,175	87,650
Total Mid-Continent Area	1,035,610	1,039,501
Gulf Coast	77,563	80,224
Southwest Texas	43,385	43,595
Eastern	106,850	106,200
Rocky Mountain Area	88,275	86,815
California—		
Santa Fe Springs	52,000	52,000
Long Beach	128,000	128,000
Huntington Beach	41,000	41,000
Torrance	44,500	45,000
Dominguez	47,000	42,000
Remainder of State	293,000	291,000
Total California	605,500	599,000
Total United States	1,957,183	1,955,335

INCREASE 1,848 BARRELS



The Oil and Gas Journal World Survey

Comprehensive Reports of Producing and Refining Operations in All Countries, Estimates of Reserves, Production and Consumption

The adjustment of the reparations problem opening the way at last for Europe and the world at large to move forward on the long delayed program of reconstruction is universally welcomed as promising unparalleled activity. Trade and industry, everywhere, have taken on new life, looking confidently ahead.

This means a great expansion of the demand for petroleum products. It means a redoubling of foreign efforts to find oil to meet that expected demand. It means a study of world oil fields, refining capacity, transportation and markets as factors in prices and profits and daily business programs.

To assist in this study The Oil and Gas Journal has compiled a World Survey of Oil, appearing as part of this issue. It offers first a resume of present production and markets throughout the globe. From this it appears the world is consuming within 9 per cent of as much petroleum as is produced annually, surely a rather close margin in a product so elusive as oil. The present market is around 1,000,000,000 barrels a year. In addition to the tabulation of production by countries to the end of 1923 there is given the production and consumption by countries in 1923 and a simple graph illustrating the relative output of the world, of the United States, Mexico and Russia.

Motor Cars by Countries

Probably one of the most interesting and astonishing features of the issue will be the tabular display of the automobiles of the world showing, by countries, the number of motor vehicles, the population and the proportion of cars to each geographical division. Some of the contrasts and comparisons between American States and great nations in automobile ownership are positively startling. They show most strikingly how great is the prospective market for motor transportation and the oil and gasoline essential to it. A graphic comparison between the number of cars in the United States, in Europe and the rest of the world accompanies the article.

Development of oil resources anywhere turns first to the ubiquitous American driller and American supply man. Leon Orlowski, secretary of the Polish Legation, contributes an informing article on new American drilling contracts in the Carpathian Mountains with valuable data concerning the progress in the fields and in the operations of the refineries in Poland.

Petroleum production in Colombia is described by Abraham Martinez, director of the Colombian Government Bureau of Information. A new pipe line is expected to hasten development of oil resources hitherto held back by lack of transportation means. He recounts the chief concessions and the progress being made.

Rumanian operations are covered fully with the latest news about the amended petroleum law which has caused such misgivings among companies holding concessions there. Increased drilling and output is reported during the year.

World Bunkering Ports

With intensified competition looming in world markets an article on the growth of world bunkering ports is of special interest. It is accompanied by a map showing the situation at a glance. The enormous expansion of oil burning ships since the war established their superiority is strikingly shown by the measures taken to assure them fuel in every quarter of the globe.

Another article on the Galician oil fields, this from an American who recently visited Poland, illustrated with photographic views, will be found especially valuable in appraising the situation there. The record production attained in 1909 of 12,480,000 barrels has not yet been equalled. Recent operations are carefully reviewed.

World reserves of petroleum today are estimated according to the very latest calculations by a revision of the best estimates brought up to the present after deducting production in the interval. The enormous drain on the United States is strikingly shown. The gain in consumption has greatly affected the estimating of reserves but the chief amendment has been forced by the discoveries of the drill.

List of American Exporters

Few Americans appreciate the extent of American exportation of petroleum products even now. A list of the American companies exporting oil and the interior refineries supplying foreign demand will be found instructive. At the same time it will show how admirably we are situated to meet the coming competition as the demand for reconstruction grows..

Africa, the "Dark Continent," has been in no particular darker than in our ignorance of its petroleum possibilities. Beyond the operations in Egypt and a few efforts here and there little is known to the world in general but the far-flung oil scouts have noted seepages and indications in many widely scattered parts of Africa. A map indicating these discoveries illustrates a very timely article.

To Americans, next to our own fields, those of South America are most interesting. A special article deals with oil development in South America which is expected to repeat the experience of Mexico, furnishing the world with much crude and using comparatively little. This summary offers in brief form a survey of oil progress in the southern hemisphere, which is supplemented elsewhere by special articles on various countries.

Reference has been made to Egyptian production. A special article deals with present developments there and with the efforts being made in South Africa to have the Government give a bonus for oil production from shales and torbanite. On the same page will be found a map showing world consumption and production of petroleum products, displaying at a glance where oil is found and where it is most consumed.

World Refining Capacity

No survey of the world's oil would be complete without a review of the world's refineries, which is given in another article. The existing capacity is far in excess of present production of crude oil and of present consumption of oil products. This review is of particular importance in view of the coming demand abroad and the prospects of world competition on a new scale.

Oil is the big asset of the Dutch East Indies. Up-to-date drilling and refining equipment are used in the Netherlands possessions which are believed to have large resources. Dr. Neil Van Aken, of the Netherlands Chamber of Commerce, New York, contributes a timely symposium on the production and refining activities in Sumatra, Java and Borneo. The history of the companies, their difficulties and successes are narrated. Many American drillers and many from Canada are engaged in the fields of Palembang, and other points in the Farther Indies.

Peru and Argentina

Peru is not generally recognized at its full importance as the world's eighth oil producing country. This year it will produce about 6,500,000 barrels and next year it is conservatively estimated the output will reach 7,750,000, much of the production being shut in during this year's depression. The story of the initial struggles of the pioneers in this field is engrossing.

Argentina's Government program of drilling is to be intensified, encouraged by recent successes. Its present production of 750,000 tons is hoped to be expanded to a round million tons before long. The erection of a large refinery at La Plata is being undertaken to take care of the anticipated development of the national oil fields. Unfortunately, exploitations by holders of concessions have not been encouraging although the Anglo-Persian Oil Company is reported to be more hopeful in view of recent developments.

Anglo-Persian Operations

Speaking of the Anglo-Persian Oil Company the report of Sir Charles Greenway at the recent annaul meeting in London, reported in this issue, covers that company's world-wide activities very thoroughly. It is incorporated in the article dealing with the Persian fields where Sir Charles says there is now a potential production of 10,000,000 tons from the wells already opened while by bringing in the wells that have been drilled down to the cap rock this production could be still further largely augmented within a few months. The search for new fields is being steadily continued. Great refineries have been established in the United Kingdom to operate on Persian crude, in addition to the refinery at Abadan and that just constructed in Australia. Sir Charles concluded his report with some remarks on the comparative refining achievements of his company and his view on future petroleum prices.

Two articles deal with Venezuela, the probable next field to hold world attention. Both are from Michael O'Shaughnessy, author of the Venezuelan Oil Handbook and give the latest information about developments in that country. He covers the fields completely.

The interrelation of the oil fields of the world is the subject of a thoughtful article, showing the reactions of production in remote quarters upon the markets of the world. The story of Mexico is specially recited as an example. The interesting suggestion is made that had Mexico not been discovered when it was it might have forced the British to open up Persia in a big way. Similarly there is speculation on the effect on foreign drilling campaigns had the Los Angeles flush production not been developed. Altogether an article to promote thought.

Petroleum in Europe

Coming back to Europe our Paris correspondent sends a complete review of the present status of production across the Atlantic. He affirms the understanding that Europe is coming back as quickly as every energy and effort will permit and corroborates the reports that European nations are redoubling their search for oil in hopes of finding a supply for the demand everywhere expected. He includes a table showing the imports of petroleum products by the various countries of Europe for the past three years and the first nine months of this year. He specially calls attention to the increase in the use of motors and the gain in the building of motorships and oil burners.

The same writer supplies a comprehensive summary of the anxious research in many European countries for a substitute for gasoline. This, in itself, is very conclusive proof of the European recognition of the need for greater use of the motor vehicles and machinery using oil. Alcohol, carbonization of coal, hydrogenation of coal and heavy liquid hydrocarbons, distillation of lignites, fish and even nut oils, water gas and marsh gas, and charcoal are all being tested with the hope of displacing the use of that much gasoline. The French, he says, really count more on charcoal gas producers than any other suggested form of gasoline substitutes.

Four years of Russian nationalization of oil are described by B. Bondarevsky, writing from Baku for the World Survey of The Oil and Gas Journal.

An important feature is a series of articles reporting oil operations since the war in Rumania, France, Czecho-Slovakia, Jugoslavia, Hungary, Austria, Holland and Russia.

J. Edgar Pew New President of A. P. I.

California Chosen as Meeting Place Next Year. May Establish Headquarters in Chicago

By James McIntyre

FORT WORTH, Tex., Dec. 12.—Some of the outstanding features of the fifth annual session of the American Petroleum Institute at Fort Worth, December 9, 10 and 11 were the election of J. Edgar Pew of Dallas, Tex., vice president of the Sun Oil Co., as president for the ensuing year; plans for the establishment of a public relations committee, the selection of California as the meeting place in 1925, the city and date to be settled later; the decision of the board of di-

J. EDGAR PEW
Vice president, Sun Oil Co.
Newly elected President, American Petroleum Institute

rectors to hold a special meeting in Colorado Springs, Colo., to discuss Henry L. Doherty's unit plan of field development and problems of utilization and means of increasing the market for oil, and the suggestion seriously advanced, to move the institute headquarters to Chicago.

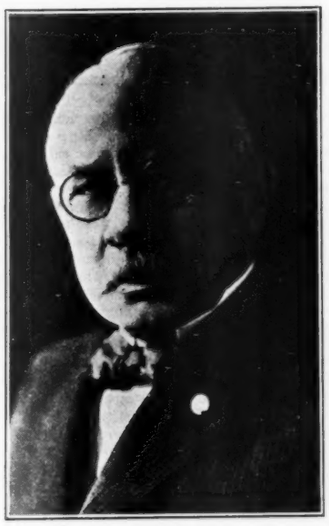
Thomas A. O'Donnell of the California Petroleum Corp. of California has been president of the Institute since its organization. He has made a very satisfactory executive, but at the close of his first year in office, and each year since, has sought to retire in favor of some one else, but the Institute would not listen to him. This year he made it so strong that the directors submitted and began looking around for a good man to take his place. There was plenty of good material to select from, and at the meeting of the new directorate at Fort Worth a nominating committee consisting of E. C. Lufkin, representing the Atlantic Coast; George Crawford, representing the Appalachian fields; W. N. Davis, representing the Mid-Continent; W. S. Farish, the Gulf Coast; E. T. Wilson, the Rocky Mountain division, and K. R. Kingsbury, the California territory, was chosen to suggest a man to succeed the genial and popular Mr. O'Donnell. After considering several well known men, any one of whom would have made a satisfactory executive, they decided on Mr. Pew, and their choice was confirmed without a dissenting vote, at Thursday's meeting of the board.

Branch Office Possible

The suggestion that the American Petroleum Institute's headquarters be moved from New York to Chicago was not acted upon, but it is said that there is some chance that this action may be taken, or if not, that a branch office may be established in the Windy City.

That there will be a sharp contest between the cities of Los Angeles and San Francisco for the privilege of entertaining the Institute in 1925 goes without saying. Both cities are the headquarters of powerful oil companies and each has some advantages over the other when it comes to staging conventions.

At the Tuesday night general session following the address of Amos L. Beatty, president of The Texas Co., which devoted considerable time to unfavorable criticism of the unit plan of field operations recently advanced by Mr. Doherty, Mr. Doherty asked that he be given an opportunity to present his plan and also that a discussion be arranged. He stated that inasmuch as much had been said about his plan at the meeting, and as he believed a misconception of the plan had



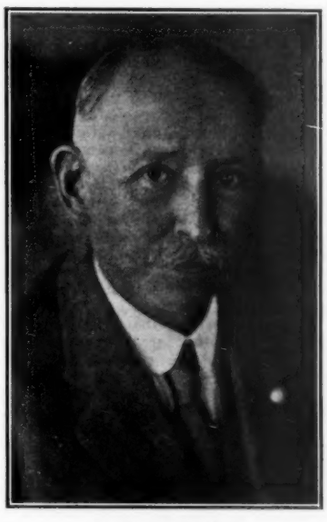
E. W. CLARK
Vice president, Union Oil Co. of California
Vice president, American Petroleum Institute

been given, he would like to be heard. Mr. Doherty's request was considered at a meeting of the board of directors on Wednesday and it was announced that it was found impossible to rearrange the program so that a joint discussion of the unit development plan could be had, and that with the concurrence of Mr. Doherty the discussion was postponed. Later in the day the board announced that the unit plan and also the question of utilization and increasing the market for oil as advocated by Mr. Doherty would be taken up at a meeting of directors to be held at Colorado Springs, February 9.

The attendance at this year's session of the Institute was twice that of any previous meeting of the organization. Heretofore the annual gathering has been held either in Washington, Chicago or St. Louis, too far removed from the fields where oil is produced to make it easily possible for many men engaged in the business to be present. This year the scene was changed to the heart of the Texas oil country and within easy distance of the Louisiana, Arkansas and Oklahoma fiields, and the result was that hundreds of oil men, producers, refiners and pipe line men of high and less exalted degree, were able to take advantage of it. Every group meeting and general session was largely attended and the discussions were of real interest to the nonmembers of the Institute as well as to the members. As a matter of fact the Institute members were many times outnumbered by the nonmembers, but their interests were identical. This year's program of papers read in group sessions covered a very wide scope and there was something of vital interest to all who listened to their reading.

Standardization Sessions

In the standardization sessions on Wednesday there were two committees able to make a complete report. The specifications of steel and iron pipe for oil country tubular goods adopted by the Board of Directors of the Institute on October 20 of this year were presented. The committee in charge of this work was headed by J. Edgar Pew, vice president of the Sun Oil Co., and was made up of oil men and manufacturers representing all parts of the country. The committee in charge of dimensional standards for cable drilling tool joints submitted its report which had been adopted by the directors of the Institute on October 20. This committee was headed originally by Grant Hubley, president of the Oil Well Supply Co. Following the death of Mr. Hubley, John T. Kirby of the same company, vice chairman, was elevated to the chairmanship and he carried on the work so well advanced by the late Mr. Hubley.



EDWARD PRIZER
Chairman of Board, Vacuum Oil Co.
Vice president, American Petroleum Institute

The reports of the other committees showed the progress made in the course of the year, but for various reasons their work had not gone far enough for them to make final recommendations.

The report of the belt standardization committee, headed by Z. F. Harshton, Imperial Refining Co., as acting chairman, suggested that the motive power builders in designing pulley sizes have pulleys sufficiently large to accommodate belt up to the rated overload capacity of power producing units, and stated that it was impossible to make final recommendations until it had full knowledge of what the engine manufacturers are doing as relates to pulley sizes.

The committee on oil field boilers, A. B. Steen, chairman, recommended that manufacturers of boilers submit plans and specifications of their products to facilitate the work of arriving at a plan of standardization.

Group Meetings

On Wednesday afternoon group meeting on the improvement of oil drilling and production methods and equipment brought out five papers of such an interesting character as to hold the attention of the large assemblage for over three hours. John Zublin, of the General Petroleum Corp., led off with a paper on "Pumping Deep Wells in California," in which he showed the results of the study and experiments of California petroleum engineers and production superintendents in trying to solve the problem of recovery from deep horizons after wells had quit flowing, and of the measure of success they had attained. William B. Way, secretary of the Natural Gas Association of America read a paper prepared by H. C. Cooper of the Hope Natural Gas Co. on "Deep Drilling" in which the geological formations in the Appalachian regions were described and the deep drilling operations of the Hope Natural Gas Co. covering a period of years and including several very deep wells, among which was the deepest well in the world, and the deepest gas producing well in the world finished recently in Westmoreland County, Pennsylvania, at a depth of 7,430 feet, were all detailed. The paper described the rigs, tools and cables used in the various operations and gave some interesting temperature records.

Frank F. Hill of the Union Oil Co. of California dealt with "Cementing Deep Wells in California;" Francis B. Foley, consulting engineer of the United States Bureau of Mines with "Dressing and Tempering Bit Steel in the Oil Field," and Professor Harold A. Thomas, of the Carnegie Institute of Technology, with "The Tensile and Collapsible Strength of Seamless Steel Casing." All the papers were illustrated by lantern slides or made additionally plain by the use of black board illustrations.

FRANK PHILLIPS
President, Phillips Petroleum Co.
Vice president, American Petroleum Institute

New Officers Elected

The board of directors elected the following officers for the ensuing year: President, J. Edgar Pew, vice president,

(Continued on Page 196)

Gasoline Prices Lower in Oklahoma

Material in Hands of Marketers Forces Reductions on All Grades. Refiners Optimistic Regarding Future. Important Fuel Oil Contract Closed

By C. O. Willson

Gasolines in the hands of marketers who purchased the material one to four weeks ago from refiners for December delivery, largely dominated the Group 3 (Oklahoma) market during the past week. As a result of the near scramble to unload these long purchases in a market which had already reacted from the bull movement of two weeks ago, prices are generally ¼ cent lower than a week ago.

Some of this resale material has been absorbed both by export and domestic buyers. However, on Monday and Tuesday jobbers were still being offered considerable gasoline of all grades some of which had been ordered out of the refineries with the sale destination unknown. These transit shipments literally flooded the Middle West markets, centering in Chicago the latter part of last week and the first of this week and brought a break in the market there which to a large extent has been reflected in Group 3.

Natural gasolines of which there has been less speculative buying than there was in straight run gasolines, are also weaker. Relatively less material is being offered the trade, however, and several of the major manufacturers who are largely sold up for the month have not lowered their prices. Scattered shipments sufficient to supply the demand were available from other concerns at ¼ cent under the prices of a week ago.

There were only minor changes in the price position of other products. The spot demand for fuel oil from buyers outside the group is not so active but prices continue generally firm. Two or three buyers reported offers at prices slightly under those which have prevailed since the first of the month but these shipments have not reached a volume yet to have any market significance. Gas oil and distillates are unchanged in price. Two of the largest manufacturers of neutrals report some improvement in demand which they believe will continue over the balance of the year. Wax was sold during the week both for December delivery and after the first of the year. The price range was from 5 to 5¼ cents. Kerosenes are still weak although a 1,000,000-gallon export purchase was made from one refiner during the week.

Gasolines and Naphtha

The surplus gasoline offered by marketers made its appearance a week ago. At first a large part of it was taken by buyers who feared the upward price trend of the previous two weeks was to continue and were anxious to cover their requirements for the remainder of the year. The supply has exceeded the demand during the past few days and the situation has been reversed. Both export buyers and jobbers apparently sensed the weakness and purchases have been relatively few, even when the marketers were willing to sacrifice to the extent that they were not only not making a profit but were compelled to take substantial losses in many instances.

To many market observers the developments of the past week were not surprising. They stated, at the time, that the rapid advances of late November and early December could not be sustained after the rush of buying had stopped. Many did not anticipate the slump until the last half of the month, and numbered among these were the marketers who did not expect to dispose of their long purchases until after the 15th of the month.

Another factor in the situation was the rapid slump in the North Texas prices. As was explained in these columns last week prices in that area advanced more rapidly than they did in Group 3 due to a heavier export and domestic demand which continued for a longer period. The demand dropped off suddenly, however, the middle of last week and prices quickly slipped until they are now practically the same as in Group 3.

The 58-60 U. S. Motor is being offered freely at 8½ cents with few buyers at that figure. As previously explained, the bulk of this material is offered by the marketers. Many refiners state they are sold up for the next 15 to 30 days but these statements are based on the supposition that the marketers, jobbers and exporters will take all the gasoline they have purchased. The latter will no doubt take out their shipments as ordered but with a declining market past experience has shown the domestic buyers may choose to settle with the refiners and leave the gasoline at the plants.

It was reported that shipments in transit had been offered the jobbers as low as 8⅜ and 8¼ cents. The higher gravity gasolines were also available at lower prices. Scattered purchases of 64-66, 375 were made at 11¼ cents although a few of the domestic shipments were still bringing 11½ cents. Prices on 60-62, 400 grade were also ¼ cent lower. Naphthas which did not advance as much as gasoline two weeks ago were firm with no change in demand.

Probable Trend

There were no important changes in the general oil situation which directly or indirectly affects gasoline prices during the past week. More and more of the trade are being convinced that the expected crude advances are indefinitely postponed, the additional wells in the new Wortham Pool of Texas being the barometer which all are watching closely at this time. Developments in this pool during the past week, which are explained elsewhere in this issue continue to remove any uncertainty as to whether the pool will show a large production.

Although this prospective pool has already brought an "easier" crude market throughout the Mid-Continent and this in turn has been a factor in the gasoline market softness of the past 10 days, a majority of the trade believe in the end it will react to the benefit of the Mid-Continent refining industry. In stopping the upward price trend both in crude and refined products it is believed a duplication of the disastrous years of 1923 and 1924 has been avoided.

In line with this view one of the largest refiners in the area stated during the past week his concern would be satisfied if approximately present market conditions would continue through February and March. He believes a majority of the refiners can show a small profit in their operations and at the same time avoid building up an artificial price structure during the winter which last year and the year before reacted just as the gasoline consuming season was getting under way.

Can Prices Be Maintained

Discussions of this nature naturally lead to the question of whether prices can be maintained. There are many varying opinions with too many uncertain factors entering into situation for anyone to offer a definite prediction. The points stressed by those who believe the market, especially gasolines, is scheduled for another large slump lies in the fact that domestic consumption of gasolines will decline steadily until the first of March. This seasonal situation is stressed together with the fact that Mid-Continent refiners at present are running more crude to their stills than any previous period in their history and will probably continue to do so as long as they show a profit in their operations.

On the other hand stocks of both crude and refined products at Mid-Continent refiners are low. It is generally agreed the same situation in regard to gasolines applies to the jobbers of the Middle West. A few of the larger jobbers bought gasoline for storage in October and November but they still have some empty storage and the smaller jobbers, according to reports, have in most instances pursued a "hand-to-mouth" policy in their purchases. There will be a greater incentive for both refiners and jobbers to fill this storage at the prices now prevailing than there would be had prices advanced to the levels of last year.

The same position probably applies to the exporters. Many leaders of the industry have predicted a record consumption of gasoline in foreign countries during the coming year. It is known the present stocks of exporters who buy a part or the whole of their supplies out of the Mid-Continent area are low. Although all market observers do not agree as to this development, it is believed by many the exporters would be willing to buy through the winter months at approximately the prices prevailing at present. There has been little export buying during the past week but there is nothing to indicate this position is to continue indefinitely. Exporters as well as the domestic buyers may be expected to profit from the experience of October and November when in endeavoring to obtain their gasoline at the lowest possible price, they waited too long and by all rushing into the market at the same time, brought about the market development which they were most anxious to avoid.

Fuel and Gas Oils

Refiners do not fear the slowup in the spot demand for fuel oils during the past week. Inquiry among a number of representative refiners revealed that practically all of them would have nothing to offer on the spot market before January 1. One refiner said he would have to buy both fuel and gas oil to apply on his orders before the end of the month.

After the first of the year shipments on contract will increase at several plants. These contracts are with the railroads and industrial users. In this connection the M. K. & T. Railroad is reported to have closed a contract with a Mid-Continent refiner with plants both in Oklahoma and North Texas. This contract is said to cover 20,000 bbls. of fuel oil a month over a period of two years. This fuel oil takes the place of that which has previously come from Mexico and California. This is additional evidence of the general fuel oil situation which is forcing buyers to obtain once more their supplies from the inland refiners.

Purchases of the 24-26 grade were made at $1.17½ during the past week with other sales ranging up to $1.25. The lower gravities were ranging from $1.15 to $1.20. Gas oil which advanced a week ago is holding its own at a price range of 3⅛ to 3¼ cents.

Natural Gasolines and Blends

The lower prices on natural gasolines in Group 3 are largely a reflection of the greater price slump in North Texas. The demand has fallen off considerably during the past 10 days and were it not for the fact that the larger concerns were sold until January 1 a larger price reduction would probably have developed. Grades A, B, and C are available at 8¾, 8½ and 8¼ cents. Despite the lower straight run gasoline prices representative blenders stated Monday they had not reduced their prices.

Lubricating Oils

Cosden & Co., the largest manufacturer in the field, reports a steady increase in the demand for neutrals during the past 10 days. The demand for bright stocks continues strong and cylinder stocks are in stronger demand. One of the leading manufacturers again advanced his price during the past week. The product of this concern is now bringing 8 cents.

REFINED MARKET BAROMETER

A reactionary development in gasolines was under way in several areas of the United States during the past week. Prices are lower in the Mid-Continent and Middle West, including natural gasolines, with a large amount of material being offered by marketers to relatively few buyers. The upward price trend has been stopped in other areas although prices outside the areas mentioned are still generally firm. There was little change in the fuel oil situation east of the Rocky Mountains with an improvement in demand in the West Coast area. Kerosenes for domestic shipment are slow with no change in the export situation. An improved demand for lubricating oils is reported from practically all sections. The demand for distillates is improving with the colder weather. Wax prices are firm.

Mid-Continent—Gasoline prices, including natural gasolines, sagged, the greatest decline being in the North Texas area. The demand for fuel oils is less than a week ago with no general change in price. Gas oil firm. Better demand for lubricating stock, including neutrals. Kerosene slow. No change in distillates.

Atlantic Seaboard—Domestic markets generally firm with exception of advances in Diesel oil and gas oil. Export prices on cylinder stocks, neutrals and gasolines higher. Further advances in fuel oil and lubricating oils expected both for export and domestic shipment.

California—Demand for absorption natural gasolines continues to feature market. Contracts closed on a basis of 3 cents under service station price. Better demand for fuel oils. No change in other products.

Chicago—Flood of gasoline, including shipments in transit, break market. All grades of gasoline lower. Better tone in kerosenes. Fuel oil strong.

Gulf Coast—Strong demand for fuel oils and neutrals. Only minor price changes.

CONVENTION DATE SET

March 3, 4 and 5 are the dates set for the annual convention of the Western Petroleum Refiners Association which will be held in Kansas City. Technical group sessions will be a feature of the program and talks on subjects especially adapted to open forum discussion will be given by men well qualified. A program of a practical nature is the aim of the committee.

Wortham a Field of Unusual Features

Offers Many Surprises in the Wonderful Rapidity of Its Development. Already a Major Pool With Enormous Potentiality

By James McIntyre

MEXIA, Tex., Dec. 13.—The Wortham Field which, in three weeks, has developed from three wildcat drilling wells into four producing wells with a combined output of over 23,000 bbls a day; 75 drilling wells and 93 derricks, is enough to make a man stand gaping with awe. It fairly flabbergasted such experienced oil men as Walter Teagle, Harry Sinclair, Nelson Moody, the Pew brothers, and a bunch of other notables who came down from the meetings of the American Petroleum Institute to witness a spectacle unique in the romantic history of oil.

There was never anything to beat it, nor was there ever anything to tie it. The writer was in at the beginning of the big development of Powell, which was the swiftest that had ever been known when it got going, and can truthfully aver that compared with Wortham Powell was a snail.

It took years to develop to their height some of the biggest fields in the world's history. To go back to early days it took from 1875 to 1882 to bring Bradford to its peak; while they were drilling and producing oil around Cushing three years or so before it reached its height, but Wortham may be over the top with a peak above 200,000 bbls. a day within two months from the time the Boyd Oil Co. finished its discovery well.

It may take longer than that; it is a question of pipe line capacity to handle the oil. If the pipe lines clamp down on the producers and prevent them from running wild, it may delay the peak to March 1, but the swiftness with which derrick material can be placed on the ground; the efficiency and number of rig builders; the abundance of rotary outfits and drilling crews; the mushy nature of the formations which the rotaries penetrate on their way to the top of the Woodbine sand; the use of quick-setting cement, and the celerity of tank builders all contribute toward well drilling of the most rapid character and make it possible for the operators to finish up the entire thin streak of pay within two months.

Some of the Unusual Angles

There are many unusual angles to the Wortham Field. For example, whoever heard of an oil company, made up of experienced men, building storage tanks at a wildcat well in anticipation of it being a producer? And whoever heard of another oil company erecting a derrick offsetting a wildcat drilling well—and all on territory condemned by some eminent geologists? The Boyd Oil Co. did the one and the Magnolia Petroleum Co. did the other. And what old-time oil man can recall in the cut-throat days of long ago an oil company receiving for its own use a very necessary piece of expensive equipment and voluntarily turning it over to another company which needed it there and then? The Magnolia did that to the Boyd crowd when it received a gas separator and, altogether unsolicited, lent it to Colonel Humphreys' company for use on an expected gusher on the Simmons farm which the Colonel was very anxious to complete. The separator was set up and was still in use today while the Boyd separator was being placed in position, and it enabled the Colonel to do a good turn by selling gas to other companies for use on drilling wells, which was a great saving to them of money and time in a territory of little fuel. And the colonel pulled another good one, aided by Humphrey luck. He built a dam across a creek which runs through a deep ravine and as soon as the concrete was set, kind nature, in the midst of a long dry spell, unexpectedly opened the flood gates of heaven and poured down a store of H_2O which filled the dam and gave Mr. Humphreys a chance to a do a little more up-to-date oil country golden rule stuff by selling water to operators rarin' to go. Why, brotherly love just oozes out of the oil men down in these broad spaces.

And can some of you old timers who operated on Oil Creek and later on Tunungwant Creek, or in the Glenn Pool or Cushing recall how you cussed out the pipe lines and listened calmly while others threatened to put the torch to the tank farms because the pipe line company with a 20,000-bbl. capacity refused to handle all the oil in a field making over 100,000 bbls. a day? You don't recall bright, well-bred young men with college degrees and a line of talk that would induce a bulldog to surrender a meaty bone coaxing you to sell the pipe line company they represented all of your production, which, as yet, was 100 per cent in anticipation? You surely don't, Old Timer, but that is the 1924 Wortham way. Every pipe line company running from the Powell Field to Mexia and right past the narrow but long development at Wortham that wants to buy oil has smart, resourceful young men on the job blarneying the oil producing companies without pipe line connections to sell them their crude, promising all manner of good service and pulling every string from the fraternity brother stuff to the Tammany brand of politics to get the signatures on the dotted line.

And to go a step farther, do any of you recall an oil company with one well in a new field ordering fifty 55,000-bbl. tanks to store the crude it didn't yet have, after already having sold 3,000,000 bbls. of oil it had not yet produced? Colonel Humphreys did just that! He bought tank farms with a wave of his hand and the rat-tat-tat of the riveting machines can be heard on the first ring as you go up the road in the morning and on the second ring as you come back at noon—or it seems as if they are shooting them up that fast, so rapidly is everything being done around here.

These are only some of the outstanding events of an unusual character in the life at Wortham. Groves of oaks are being cut down and the stumps pulled up to make room for the houses of Humbletown, as the Humble Oil & Refining Co.'s camp has been dubbed, even before there is a stick of house timber in sight. Everywhere from the southern limits of Mexia to the northern limits of Corsicana, a distance of, say, 25 miles, there are signs of activity that ultimately have their center in the Wortham Field. The hard surfaced road from Mexia to the town of Wortham, a road that grew out of the Mexia oil boom, is lined from early morning until dark with teams and trucks and oil men and curiosity seekers in cars ranging from Fords to Rolls-Royces going and coming from the field. Overturned wagons and trucks, which were forced too close to the edge by the congestion of vehicles, may be seen in the ditches awaiting the coming of night when the slowing down of traffic will enable wrecking crews to set them aright. On every hand for miles men are hard at work under the driving influence of bosses, themselves driven to the limit by impatient superiors anxious to get wells started.

Their Sublime Confidence

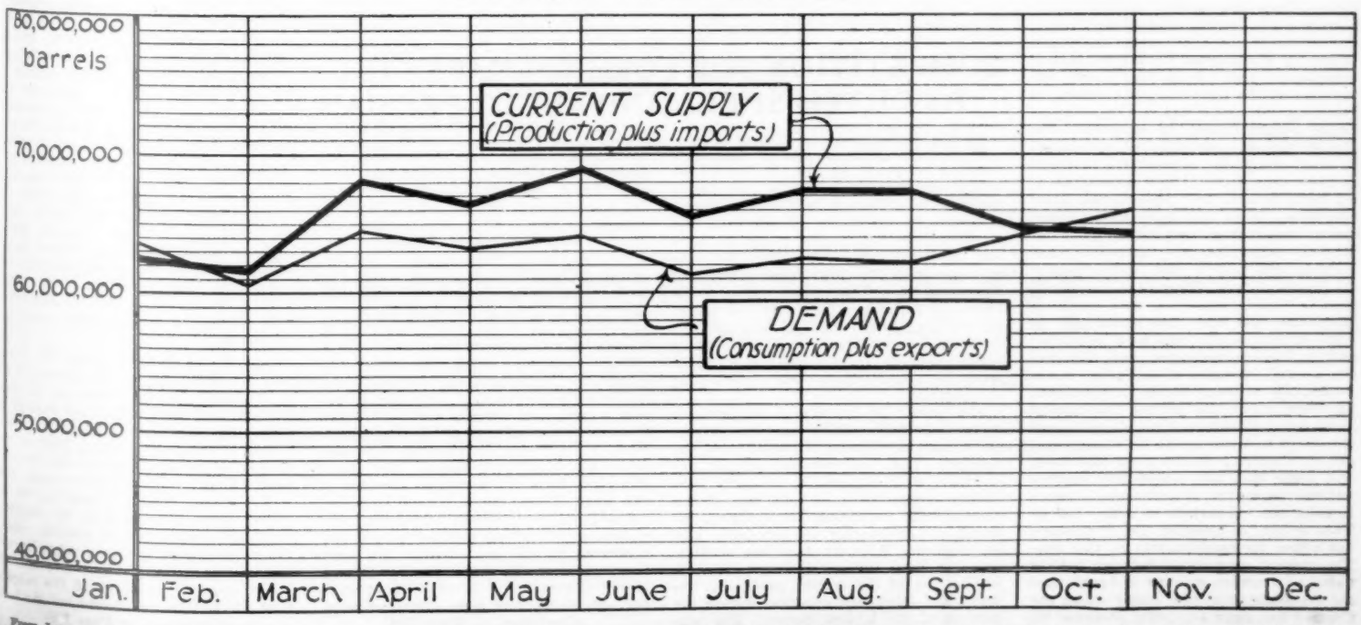
The oft-heard statement that the modern working man is a lazy, inefficient, indifferent fellow compared to the men of other days is given the lie in Wortham. Here every man is up on his toes giving his best to the boss. It is a small world of feverish activity carried on with a fine spirit of willingness and the result is seen in the astonishing number of derricks that are already up; the number of wells drilling; the tanks that have been set; the gathering lines laid; the pumps blocked up, and other preparations that have been made for a production which it is expected will rarely have been exceeded in a territory so small. It is a constantly changing scene. A photograph of the field is old stuff by the time the negative has been developed and the picture printed. You stand on the edge of the field one day and two days later your edge will have changed into a center.

A day or two in Wortham is a great experience. It will knock into a cocked

(Continued on Page 35)

CURRENT SUPPLY OF AND DEMAND FOR CRUDE OIL IN 1924

Based on reports of United States Geological Survey



From January 1, 1924 to October 31, 1924—Average daily supply, 2,162,000 bbls.; average daily demand, 2,077,000 bbls. Average daily excess of supply over demand, 85,000 bbls.

Suggestions for Relief of the Industry

System of Credit Balances, Localized Proration in Time of Overproduction, and Limitation of Cracking Operations Proposed as Remedy

By P. J. Hurley
President of the Gilliland Oil Co., in Collaboration with Frank S. Craver.

Because of the present attitude of all concerned within and without, we find the industry in an extremely critical condition. It has been paralyzed for four years because of the excessively low and uncertain price of crude oil and its products and because of this the industry faces bankruptcy and disintegration unless there is a radical change at once.

The causes of this condition are:

1. The readjustment of all business conditions after the war.

2. The attitude of the Federal and State Governments and the American people toward the industry.

3. A production of crude oil and the manufacture of its products greatly in excess of the demand for these commodities, resulting in a large accumulation of stocks.

4. Selfishness and greed.

Because of this condition the producing and refining branches of the industry have been operating at a loss through most of this period. No industry can continue to exist in this condition.

With chaos and bankruptcy waiting for us along the road ahead, if the present methods and conditions are continued, this is no time for hesitation or delay. There is a solution to the present serious situation of the oil industry, just as there is a solution to every difficult problem that faces any line of industry. We hereinafter offer some suggestions that we believe will aid materially in the solution of the problem. The serious suggestion of any man who has put his mind on a problem of this nature is entitled to consideration. There will be those who will frankly and sincerely disagree with the suggestions that we are making, but if they will in turn make constructive suggestions, the members of the oil industry can eventually solve the problem that confronts them.

Should Help, Not Hinder

To bring about this solution we offer the following suggestions:

FIRST: Cooperation at Washington with a friendly far seeing Government, both in the Executive and Legislative branches. Comparisons are odious but sometimes lessons of great value can be derived from this source. In this particular, it might be well to compare the attitude of the British Government with ours. Where in Washington we find opposition, antagonism and efforts to impede the progress of the American oil industry, in Downing Street we find the opposite attitude toward British oil companies. The British Government aids and encourages in every honorable manner its nationals in their hunt for oil, their acquisition of oil territory and their preservation of oil resources. With their government steadfastly behind them and aiding them, the British companies are uncovering and putting into reserve vast storehouses of oil for the future. They have the advantage in world competition with our large companies and they are encouraged to come to our country and help us extract and deplete our resources. All this with the avowed intention of becoming, in the future, the supreme nation in petroleum. In other words the British Government has a true conception of the situation and the vision and courage to do what is necessary. On this point we know that many will argue that this competition between nations for control of petroleum is wrong in principle. It may be or it may not be. That is not the question the oil producer has under his consideration at this time. The present competition between individuals and between nations is based upon the economic principles under which civilization has made wonderful progress. We do not believe the oil industry would change these principles if it could. We are sure that it could not change them if it desired to do so, therefore the object should be to make the industry reasonably profitable under existing economic conditions to the individuals who are engaged in it.

Our Government should aid in every way our large companies in their exploration and development of foreign fields; it should encourage and foster the small companies and individual operating in America and it should pursue a constructive instead of a destructive policy with regard to them; it should do all in its power to conserve our oil resources and stop the present economic waste and it should counteract the prejudice kept alive among the people by the demagogue, by placing before them the true picture of the industry, its problems and its value to the nation.

Attitude of Officials

SECOND—Cooperation by the State Governments instead of the present attitude of active antagonism and Bolshevism. During the past two years we have seen the Governors of certain American Commonwealths abusing the great power entrusted to them and diverting the resources of the States to enter into the business of retailing gasoline, for the purpose of still further depressing the price of this commodity when every gallon sold was already being produced and manufactured at a loss. What would the country think if the Governor of New York for example, would use the machinery of that State to enter into the retailing of the products of the farm in order to further depress the price of farm products when they already were selling below the cost of production. The two are analogous.

We know that we are doing ourselves an injustice when we charge any class of our citizens of having motives less worthy than our own. There are, of course, many sincere men who are conscientiously opposed to the entire present structure of the oil industry. We cannot escape noticing, however, that when a public official or individual wishes to get personal advertising, he immediately pounces upon the oil industry. Why? Because of the prejudice in the minds of the people against the industry and more especially aginst the "Standard Oil Group." The men making these attacks are using the popular arguments of fifteen and twenty years ago, not realizing and not caring that they are obsolete. In no industry in America, not excepting the automotive industry, have conditions changed so rapidly during the last fifteen years. We would not leave the impression that we now contend that there are no fraudulent stock promoters and no corruptionists in the oil business. We do not assert that all the members of the so-called "Standard Oil Group" are puritanical in their business transactions nor that some of them do not still attempt to fix prices to their own advantage. What we do contend is; that the great majority of the companies and individuals, whether they belong to the Standard or Independent Group, are honest and conscientious in their business transactions, and the American people and the Federal and State Governments should be intelligent enough to separate the good from the bad and not condemn the entire industry because it contains a few bad elements.

THIRD—Cooperation by the people instead of the present attitude of antagonism and prejudice. They must be made to realize that in pursuing their present course they are weakening our nation's control of this great commodity and that if they continue in this attitude the nation must lose its pre-eminence in oil and the American consumers must pay tribute to the nation that gains control.

FOURTH—Cooperation in the industry tself. The old antagonism must be forgotten, selfishness and greed must not be allowed to run rampant. We must work together for the good of the industry and the nation. A short sighted policy is now prevalent and it must be replaced by a far sighted and constructive policy.

Credit Balance System

We suggest three changes that we believe will eliminate, to a large extent, the internal difficulties of the industry. The three changes will not work any serious hardship on any branch of the industry. They are, we believe, economically sound and thoroughly practical and feasible. They will not cause any serious commotion or upheaval but can be put in operation with hardly a ripple on the surface of the industry and yet we believe they will change a losing, uncertain and unsettled business into a stable, profitable enterprise.

The first of these changes is in the producing end of the industry and pertains to the method of purchasing and paying for crude oil. The present method employed is the purchase of the crude oil and payment for same twice a month at the market price posted on the day the oil is run. We believe this method of purchase should be changed to the system known as "Credit Balances."

Under the credit balance system the oil is run into storage by the pipe line companies and a receipt issued to the producer showing that there are so many barrels of oil stored to his credit. These storage receipts can be held by the producer until such time as he desires to dispose of his oil or can be used as collateral with his banker for loans. The receipts are sold to any oil purchasing agency and the oil is delivered to such agency. When the price for oil offered by the purchasing agencies is low and below cost of production, the producer in most cases will not sell his oil and if not enough oil is offered to meet the demand, then the price of oil must go up. If the producer shows poor business judgment and starts too much development when the price is low, then his banker will force him either to curtail his work or sell his oil at the low price offered and the individual producer will be the loser because of his own folly and not the other producers, as is the case under the present system of purchases. (For an enlightening statement of the credit balance system, we are indebted to Mr. Samuel Hays of Tulsa.)

There is an insatiable desire on the part of some citizens to invest in oil. These citizens could buy these certificates with reasonable safety instead of buying oil stocks offered by promoters. In buying stocks offered by promoters the purchaser takes the risk on the integrity of the promoters. If the promoters are honest he risks their ability to produce oil. If they produce oil he risks the promoters' ability to operate on a paying basis. After all these risks taken by him have been resolved in his favor he risks the general oil situation by which the price of crude is controlled and by which his investment is made ultimately profitable or unprofitable. In buying an oil certificate or storage receipt he takes but one risk: that is on the general condition of the industry and his certificates will advance or decline based on that one condition.

Under the present system, the financing of the purchase and storage of oil is confined to a few companies and they in turn deal with only a few bankers in borrowing the money necessary. This means a congestion and a limit to the amount of money obtainable for this purpose. Under the system we suggest, the public would furnish a large amount of money for this purpose by the purchase of these certificates or receipts. Also, the producers using these receipts for collateral would borrow from thousands of banks over the country and this congestion would thus be relieved and the bor-

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COMPETITION FOR FOREIGN MARKETS BY DUTCH-SHELL AND ANGLO-PERSIAN

While it is agreed among American interests engaged in the marketing of petroleum products abroad that the world, and especially Europe, will require greatly increased quantities of oil with the steady rehabilitation now going on, it is also stressed that competition for this business is greater now than it ever was. The activities of the great foreign combines are growing in intensity and scope, favored in many cases by strong governmental support and legislation as to exploitation in certain countries which gives them more or less exclusive rights of operation.

The policy of the Royal Dutch-Shell group has been called one of patient and persistent pursuit of world-wide expansion. This has resulted in the acquisition or incorporation of many subsidiary companies in all quarters of the globe for the producing, transporting, refining and marketing of petroleum and its products. With its American subsidiary, the Shell Union Oil Corporation, it is also one of the largest producing, refining and marketing concerns within the borders of the United States. The other strong foreign combine, which has grown to extraordinary proportions since the World War, is the Anglo-Persian Oil Co., 60 per cent of whose stock is owned by the British Government.

Seek Sources of Supply

In considering competition in foreign petroleum, it is well to note that the policy of these two combines in developing, maintaining and expanding world-wide business, is to secure sources of supply in all parts of the world and to avoid dependence upon one or a few countries. The Royal Dutch-Shell group has successfully pushed into practically every producing country and thus been able to secure advantages in the operation of its great distributing organization. Sir Marcus Samuel, now Lord Bearsted, formerly managing director of the Shell Transport & Trading Co., pointed out in his 1920 report that the advantage of having production not concentrated in any one country, but scattered all over the world so that it may be distributed under favorable geographical conditions, has been clearly proven.

(Continued on Page 194)

O.K. DRILLING AND FISHING TOOLS

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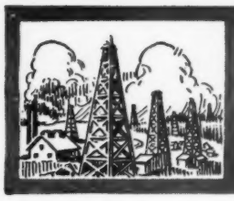


REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	Dec. 16		Dec. 9		Dec. 2	
50-52 450 end point (Naphtha)	.07½	.07¾	.07¾	.08	.07¼	.07½
56-58 450 end point	.08	.08¼	.08¼	.08½	.08¼	.08½
58-60 437 end point (U. S. Motor)	.08¼	.08½	.08¾	.09	.08½	.08¾
60-62 400 end point	.09¾	.10	.10	.10¼	.09½	.09¾
64-66 375 end point	.11	.11¼	.11½	.11¾	.11	.11¼
68-70 360 end point	.11¾	.12	.12	.12¼	.12	.12¼
OKLAHOMA (Group 3)—						
50-52 450 end point	.07½	.07¾	.07½	.07¾	.07½	.07¾
56-58 450 end point	.08¼	.08½	.08½		.08¼	.08½
58-60 437 end point (U. S. Motor)	.08½	.08¾	.08¾	.09	.08½	.08¾
60-62 400 end point	.09½	.09¾	.09¾	.10	.09½	.09¾
64-66 375 end point	.11¼	.11½	.11½		.11¼	.11½
68-70 350 end point	.12	.12¼	.12	.12¼	.12	.12¼
KANSAS—						
58-60 437 end point (U. S. Motor)	.08½	.09	.08¾	.09	.08½	.09
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.07¼	.07½	.07¼	.07½	.07¼	.07½
50-52 440 end point (Naphtha)	.07½	.07¾	.07½	.07¾	.07½	.07¾
56-58 450 end point	.08½	.08¾	.08¾	.09	.08¼	.08½
58-60 437 end point (U. S. Motor)	.08¼	.08¾	.09¼		.08¾	
60-62 400 end point	.09½	.10	.10	.10¼	.09½	.09¾
64-66 390 end point	.11	.11¼	.11¼	.11½	.10¾	.11¼
64-66 375 end point	.11¼	.11½	.11½	.11¾	.11¼	.11½
68-70 360 end point	.12	.12¼	.12¼	.12½	.12¼	.12½
NORTH LOUISIANA—						
56-58 450 end point	.09	.09¼	.09	.09¼	.08½	.08¾
58-60 437 end point (U. S. Motor)	.09¼	.09½	.09¼	.09½	.08¾	.09
60-62 400 end point	.10½	.10¾	.10¾	.11	.10½	.10¾
64-66 390 end point	.11½	.11¾	.11½	.11¾	.11	.11¼
64-66 375 end point	.11¾	.12	.11¾	.12	.11¼	.11½
ARKANSAS—						
58-60 450 end point	.09	.09¼	.09	.09¼	.08½	.08¾
58-60 437 end point (U. S. Motor)	.09	.09½	.09¼	.09½	.09	.09¼
64-66 375 end point	.11½	.12	.11¾	.12	.11¼	.11½
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.12¼	.12½	.12¼	.12½	.11¼	.11½
PENNSYLVANIA—						
52 Naphtha	.10¾		.10¾		.10¼	
54 Naphtha	.11		.11		.10½	
56 Gasoline	.11¼		.11¼		.10½	
58 Gasoline	.11½		.11½		.11¼	
60 Gasoline	.12¾		.12¾		.11¾	
62 Gasoline	.12½		.12½		.12½	
64 Gasoline	.14½		.14½		.14½	
66 Gasoline	.15¼		.15¼		.15¼	
68-70 Gasoline	.16½		.16½		.16½	
CALIFORNIA—						
54-56 437 end point (U. S. Motor) domestic	.09	.09½	.09	.09½	.09	.09½

*Colorado points.

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	Dec. 16		Dec. 9		Dec. 2	
Grade Double A, 80-87.9 375 e.p., rec. 90%	.08¾	.09	.09	.09¼	.09	
Grade A, 72-79.9, 375 end point, rec. 90%	.08¾	.09	.09	.09¼	.09	
Grade Double B, 84-92, 375 e.p., rec. 85%	.08½	.08¾	.08¾	.09	.08½	.08¾
Grade B, 76-83.9, 375 end point, rec. 85%	.08½	.08¾	.08¾	.09	.08½	.08¾
Grade C, 80-90, 375 end point, rec. 78%	.08½		.08½	.08¾	.08½	
OKLAHOMA (Group 3)—						
Grade Double A, 80-87.9 375 e.p., rec. 90%	.08¾	.09	.09		.09	.09¼
Grade A, 72-79.9, 375 end point, rec. 90%	.08¾	.09	.09		.09	.09¼
Grade Double B, 84-92, 375 e.p., rec. 85%	.08½	.08¾	.08¾		.08¾	
Grade B, 76-83.9, 375 end point, rec. 85%	.08½	.08¾	.08¾		.08¾	
Grade C, 80-90, 375 end point, rec. 78%	.08¼	.08½	.08½		.08½	
NORTH TEXAS—						
Grade Double A, 80-87.9 375 e.p., rec. 90%	.08¾		.09		.09	
Grade A, 72-79.9, 375 end point, rec. 90%	.08¾		.09		.09	
Grade Double B, 84-92, 375 e.p., rec. 85%	.08¼	.08½	.08¾		.08¾	
Grade B, 76-83.9, 375 end point, rec. 85%	.08¼	.08½	.08¾		.08¾	
Grade C, 80-90, 375 end point, rec. 78%	.08¼		.08½		.08½	
NORTH LOUISIANA—						
Grade B, 76-83.9, 375 end point, rec. 85%	.08½	.08¾	.08½	.08¾	.08¼	.08½
Grade C, 76-82, 375 end point, rec. 85%	.08	.08¼	.08	.08¼	.07¾	.08
CALIFORNIA						
68-80 absorption, 360-390 end point	.11½	.12	.11	.11½	.10	.10½
78-84 compression, 350 end point	.10½		.10½		.10	

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	Dec. 16		Dec. 9		Dec. 2	
60-62 450 end point	.08½	.08¾	.08½	.08¾	.08½	.08¾
64-66 450 end point	.08½	.08¾	.08½	.08¾	.08½	.08¾
68-70 437 end point	.08¾	.09	.08½	.09	.08½	.08¾
OKLAHOMA (Group 3)—						
60-62 450 end point	.08½	.08¾	.08½	.08¾	.08¼	.08½
64-66 437 end point	.08½	.08¾	.08½	.08¾	.08¼	.08½
68-70 430-435 end point	.08¾		.08¾	.09	.08½	.08¾
NORTH TEXAS—						
58-62 440 end point	.08½	.08¾	.08½	.08¾	.08½	
58-60 450 end point	.08½	.08¾	.08½	.08¾	.08½	
PENNSYLVANIA—						
*60 62	.12½		.12½		.12½	
*64-66	.12½		.12½		.12½	
*66-68	.12½		.12½		.12½	
*68-70	.12½		.12½		.12½	

*At Sistersville, W. Va.

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	Dec. 16		Dec. 9		Dec. 2	
41-43 water white Kerosene	.04⅜	.04⅝	.04⅜	.04½	.04⅜	.04½
42-44 water white Kerosene	.04½	.04¾	.04⅝	.04¾	.04½	.04¾
KANSAS—						
41-43 water white Kerosene	.04⅝	.04⅞	.04⅝	.04⅞	.04⅝	.04⅞
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05	.05¼	.05	.05¼	.05	.05¼
42-44 water white Kerosene	.05¼	.05½	.05¼	.05½	.05¼	.05½
ROCKY MOUNTAIN STATES—						
*40-42 water white Kerosene	.07½	.07¾	.07½	.07¾	.07½	.07¾
NORTH TEXAS—						
41-43 water white Kerosene	.04¼	.04½	.04¼	.04½	.04¼	.04½
41-43 prime white Kerosene	.04	.04¼	.04	.04¼	.04	.04¼
40-42 prime white Kerosene	.04	.04¼	.04	.04¼	.04	.04¼
42-44 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04⅝	.04⅝
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04⅜	.04⅝	.04⅜	.04⅝	.04⅜	.04⅝
42-44 water white Kerosene	.04½	.04⅝	.04½	.04⅝	.04½	.04⅝
38-40 Straw distillate	.03⅝	.03¾	.03⅝	.03¾	.03⅝	.03¾
ARKANSAS—						
41-43 water white Kerosene	.05¼	.05½	.05¼	.05½	.05⅜	.05½
42-44 water white Kerosene	.05½	.05⅝	.05½	.05⅝	.05⅝	.05¾
PENNSYLVANIA—						
43 Kerosene prime white	.07		.07		.07	
45 Kerosene water white	.07½		.07½		.07¼	
46 Kerosene water white	.08¼		.08¼		.08	
47 Kerosene water white	.08¼		.08¼		.08¼	
34 Neutral	.09		.09		.09	
34 Sundebloomed Neutral	.07¾		.07¾		.07¾	
36 Miners' Neutral	.06½		.06½		.06½	
300 Mineral Seal	.07½		.07½		.07½	
CALIFORNIA—						
40-42 water white (high burning test)	.07½	.08	.07½	.08	.07½	.08
Engine distillate, 43-45 445 end point	.06	.06½	.06	.06½	.06	.06½
Engine distillate, 42-44 480 end point	.05½	.05¾	.05½	.05¾	.05½	.05¾

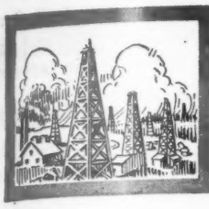
*Colorado points.

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	Dec. 16		Dec. 9		Dec. 2	
24-26 Fuel Oil (sellers' cars, Group 3)	1.15	1.20	1.12	1.17	1.12½	1.17½
22-24 (El Dorado)	1.20	1.25	1.15	1.20	1.10	1.15
18-20 (Smackover)	1.10	1.15	1.12	1.17	1.05	1.10
32-36 Gas Oil	.03¼	.03½	.03	.03⅛	.02⅞	.03
36-38 Distillate	.03⅜	.03⅝	.03¼	.03½	.03½	.03⅜
38-40 Straw distillate	.03¾	.04	.03½	.03¾	.03¾	.04
KANSAS—						
24-26 Fuel Oil	1.25	1.30	1.20	1.25	1.20	1.25
32-36 Gas Oil	.03¼	.03⅜	.03¼	.03⅜	.03	.03⅛
38-40 Distillate	.03¾	.04	.03¾	.04	.03¾	.04
OKLAHOMA (Group 3)—						
22-26 Fuel Oil (sellers' cars)	1.15	1.20	1.15	1.20	1.10	1.15
24-26 Fuel Oil (buyers' cars)	1.15	1.20	1.15	1.20	1.10	1.15
24-26 Fuel Oil (sellers' cars)	1.17½	1.20	1.17½	1.20	1.15	
28-30 Fuel Oil (sellers' cars)	1.25	1.30	1.25	1.30	1.20	1.25
32-36 Gas Oil	.03⅛	.03¼	.03⅛	.03¼	.03	.03⅛
38-40 Straw distillate	.03⅝	.04¾	.03⅝	.03¾	.03⅝	.03¾
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.15	1.20	1.25	1.20	1.10	1.15
26-30 Fuel Oil	1.20	1.25	1.20	1.25	1.15	1.20
32-36 Gas Oil	.03¼	.03¼	.03¼	.03¼	.02⅞	.03
36-38 Gas Oil	.03¼	.03½	.03¼	.03½	.03	.03⅛
38-40 Straw distillate	.03½	.03¾	.03½	.03¾	.03¼	.03½
NORTH LOUISIANA—						
18-20 Fuel Oil	1.10	1.15	1.10	1.15	1.05	1.10
24-26 Fuel Oil	1.15		1.15	1.20	1.10	1.15
32-36 Gas Oil	.03¼	.03½	.03¼	.03½	.03¼	.03½
ARKANSAS—						
38-40 Distillate	.03¾	.04	.03¾	.04	.03¼	.03¾
32-36 Gas Oil	.03¼	.03⅜	.03¼	.03⅜	.03	.03⅛
22-26 Refinery Fuel Oil	1.10	1.15	1.10	1.15	1.05	1.10
GULF COAST (South Texas)—						
Gas Oil	.04½	.05	.04½	.05	.04½	.05
Fuel Oil	1.60	1.70	1.60	1.70	1.60	1.70
PENNSYLVANIA—						
30-34 Fuel Oil	.06		.06		.05½	
36-40 Fuel Oil	.06½		.06½		.05¾	
CALIFORNIA—						
33-36 Distillate	.04	.04½	.04	.04½	.04	.04½
27-33 Distillate	.03¾	.04	.03¾	.04	.03¾	.04
15-20 Fuel Oil (at tide water)	1.40		1.40		1.40	

NEUTRAL OILS

OKLAHOMA (Group 3)—	Dec. 16		Dec. 9		Dec. 2	
70-80 vis., 2½ color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
100 vis., 2 color, 20-25 cold test	.04½	.05	.04½	.05	.04½	.05
100 vis., 3 color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
150 vis., 3 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.06½	.07	.06½	.07	.06½	.07
180 vis., 4 color, 23-28 cold test	.08	.08½	.08	.08½	.08	.08½
180 vis., 3 color, 23-28 cold test	.08½	.09	.08½	.09	.08½	.09
200 vis., 3 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
200 vis., 4 color, 23-28 cold test	.09½	.10	.09½	.10	.09½	.10
220 vis., 3 color, 25-30 cold test	.11½	.12	.11½	.12	.11½	.12
220 vis., 4 color, 25-30 cold test	.10¾	.11½	.10¾	.11½	.10¾	.11½
240 vis., 3 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
240 vis., 4 color, 25-30 cold test	.12¾	.13¼	.12¾	.13¼	.12¾	.13¼
280 vis., 3 color, 25-30 cold test	.16½	.17	.16½	.17	.16½	.17
280 vis., 4 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.07½	.08	.07½	.08	.07½	.08
180 vis., 6 color, 23-28 cold test	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾
200 vis., 5 color, 23-28 cold test	.09	.09½	.09	.09½	.09	.09½
200 vis., 6 color, 23-28 cold test	.13	.13½	.13	.13½	.13	.13½
220 vis., 5 color, 25-30 cold test	.10	.10½	.10	.10½	.10	.10½
220 vis., 6 color, 25-30 cold test	.14¼	.14¾	.14¼	.14¾	.14¼	.14¾
240 vis., 5 color, 25-30 cold test	.12	.12½	.12	.12½	.12	.12½
240 vis., 6 color, 25-30 cold test	.15¼	.15¾	.15¼	.15¾	.15¼	.15¾
280 vis., 5 color, 25-30 cold test	.13½	.14	.13½	.14	.13½	.14
180-200 vis., S. R. green, 40-45 cold test	.07½	.08	.07½	.07¾	.07½	.07¾



REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

190-200 dark green, 40-45 cold test	.06½	.07	.06½	.07	.06½	.07
170-190 dark green, 40-45 cold test	.06	.06½	.06	.06½	.06	.06½
600, E filtered	.20	.21	.20	.21	.20	.21
190-200 vis. @ 210 "D" Bright Stock	.34		.34		.34	
200-210 vis. @ 210 "E" Bright Stock	.29		.29		.29	
150 vis. @ 210 "D" Bright Stock	.30		.30		.30	
150 vis. @ 210 "E" Bright Stock	.26		.26		.26	
Waxes:						
124-126 White Crude Scale Wax	.05	.05⅛	.04⅞	.05⅛	.05	.05⅛
PENNSYLVANIA—						
150, 3 color	.22		.22¼		.18	
180, 3 color	.24		.23½		.20½	
200, 3 color	.25½		.25		.22½	
220, 3 color	.28		.27		.22	
600, steam refined	.22		.22½		.22¼	
635, steam refined	.25		.25		.25	
650, steam refined	.27¼		.27¼		.27	
600, Pennsylvania flash	.32		.32		.30	
630, Pennsylvania flash	.38		.38		.38	
*550, E filtered	.23½		.23½		.19¼	
*600, E filtered	.25		.25		.23½	
600, E filtered	.23¾		.23½		.22½	
600, D filtered	.32		.32		.30	
550, E filtered	.22		.20		.20	
550, D filtered	.25		.24		.24	
Pennsylvania Bright Stock	.38½		.38½		.37	
†122-124 White Crude Scale Wax	.05½		.05⅝		.05⅝	
†122-124 White Crude Scale Wax	.05½		.05½		.05½	

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.06½	.07	.06½	.07	.06½	.07
No. 2 color, 100 vis., pale oil	.09½	.10½	.09½	.10½	.09½	.10½
No. 2 color, 150 vis., pale oil	.11½	.12½	.11½	.12½	.11½	.12½
No. 3 color, 200 vis., pale oil	.13½	.14½	.13½	.14½	.13½	.14½
No. 3 color, 300 vis., pale oil	.16	.17	.16	.17	.16	.17
No. 3½ color, 500 vis., pale oil	.18	.19	.18	.19	.18	.19
No. 3½ color, 750 vis., pale oil	.23½	.24½	.23½	.24½	.23½	.24½
No. 4½ color, 1200 vis., pale oil	.25½	.26½	.25½	.26½	.25½	.26½
No. 4½ color, 2000 vis., pale oil	.29	.30	.29	.30	.30½	.31½
eN. 2 color, 150 vis., pale filtered	.20½		.20½		.20½	
No. 2 plus color, 200 vis., pale filtered	.22		.22		.22	
No. 2½ minus color, 300 vis., pale filtered	.25½		.25½		.25½	
No. 2½ color, 500 vis., pale filtered	.29½		.29½		.29½	
No. 2½ color, 750 vis., filtered	.39½		.39½		.39½	
No. 5 to 6 color, 200 vis., red oil	.12	.13	.12	.13	.12	.13
No. 5 to 6 color, 300 vis., red oil	.14½	.15½	.14½	.15½	.14½	.15½
No. 5 to 6 color, 500 vis., red oil	.16	.17	.16	.17	.16	.17
No. 5 to 6 color, 750 vis., red oil	.20½	.21½	.20½	.21½	.20½	.21½
CALIFORNIA—						
200 vis., 2½-3 color	.15	.16	.15	.16	.15	.16
300 vis., 2 -4 color	.15	.17	.15	.17	.15	.17
350 vis., 3½-4 color	.17½	.18½	.17½	.18½	.17½	.18½
400 vis., 4 -4½ color	.19	.20	.19	.20	.19	.20
Red Neutrals:						
200 vis., 4½-5 color	.13	.14	.13	.14	.13	.14
300 vis., 5 -6 color	.14	.16	.14	.16	.14	.16
400 vis., 5 -6 color	.16	.17	.16	.17	.16	.17
500 vis., 6 -6½ color	.17	.18	.17	.18	.17	.18
600 vis., 6½ plus color	.18	.19	.18	.19	.18	.19

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK DOMESTIC MARKET

Bayonne Refinery Prices:	Dec. 16	Dec. 9	Dec. 2
U. S. Motor Gasoline, 58-60 437	.13	.13	.12½
*Bunker Oil, 14-16 Be.	1.80	1.80	1.80
Diesel Oil, 28-30 Be.	2.10	2.00	2.00
Furnace Oil, New York City	.10	.10	.10
Gas Oil, 32-36 Be.	.05¼	.05	.05
41-43 Kerosene prime white		.08½	.08½

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

Motor Gasoline:	Dec. 16	Dec. 9	Dec. 2
58-60 Be. gravity, in cases	.26.65	.26.65	.26.40
U. S. Navy, in bulk	.12½	.12½	.12¼
Naphtha:			
60° F., 59-61 Be. gravity, in bulk	.14¾	.14¾	.14
60° F., 63-66 Be. gravity, in bulk	.16	.16	.15½
60° F., 66-68 Be. gravity, in bulk	.17½	.17½	.17
Kerosene:			
Standard white, 40-42 Be. grav., in bulk	.06½	.06½	.06½
Standard white, 40-42 Be. grav., in barrels	.13½	.13½	.13½
Standard white, 40-42 Be. grav., in cases	.16.9	.16.9	.16.9
Water white, 42-44 Be. grav., in bulk	.07½	.07½	.07½
Water white, 42-44 Be. grav., in barrels	.14½	.14½	.14½
Water white, 42-44 Be. grav., in cases	.17.9	.17.9	.17.9
†Lubricating Oils:			
Cylinder Stock, extra light filtered, 600, in barrels	.46½	.44½	.44½
Cylinder Stock, light filtered, 600, in barrels	.40½	.38½	.38½
No. 1 white neutral, .878 spec. grav.	.43	.43	.43
No. 1 Summer Black, .895 spec. grav.	.18	.12	.12
No. 5 Bright Stock, .897 spec. grav.	.50½	.48½	.48½
Special "A" red oil, .897 spec. grav., 170 vis.	.21	.21	.21
No. 2 red oil, .903 spec. grav., 212 vis.	.22	.22	.22
No. 1 red oil, .905 spec. grav. 265 vis.	.23	.23	.23
Polar red oil, .906 spec. grav., 295 vis.	.25	.25	.25
Pale oil, "25", .899 spec. grav.	.20½	.19½	.19½
Pale oil, "28", .892 spec. grav.	.16	.16	.16
Paraffin Wax:			
120-122 a.m.p., per lb.	.06	.06	.06
125-127 a.m.p., per lb.	.06⅛	.06⅛	.06⅛
130-132 a.m.p., per lb.	.06½	.06½	.06½
135-137 a.m.p., per lb.	.07½	.07½	.07½

†All lube prices in barrels.

LOS ANGELES EXPORT MARKET

	Dec. 16		Dec. 9		Dec. 2	
Kerosene water white	.05	.05½	.05	.05½	.05	.05½
U. S. Motor gasoline, 54-56, 437 end point	.08½	.09	.08½	.09	.08½	.09

CRUDE OIL PRICES

Arkansas and North Louisiana

Caddo, 38° and above	$1.35
35° to 37.9°	1.25
32° to 34.9°	1.15
Below 32°	1.00
Homer, 35° and above	1.10
33° to 34.9°	1.00
31° to 32.9°	.90
Below 31°	.75
Haynesville, 33° and above	1.00
Below 33°	.90
El Dorado, 33° and above	1.00
Below 33°	.90
Bull Bayou, 38° and above	1.15
35° to 37.9°	1.00
32° to 34.9°	.85
Cotton Valley	.95
De Soto	1.20
Crichton	1.00
Bellevue	1.35
Smackover, 25° and above	.95
Below 25°	.85
*Stephens, Ark.:	
26° and above	.90
Below 26°	.70

*Posted by Atlantic Oil Producing Co.

Wyoming and Montana

Rock Creek (Wyo.)	$ .95
Salt Creek	.85
Big Muddy	.75
Mule Creek	.60
Grass Creek (light)	1.20
Elk Basin	1.20
Lance Creek	1.15
Osage	1.15
Cat Creek (Mont.)	1.20
Sunburst (Mont.)	.90
Lost Soldier	.78
Greybull and Torchlight	1.15
Hamilton Dome	.80

Lander based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas

Prairie Oil & Gas Co. and other major purchasing companies, except as noted:

Below 30°	$ .75
30° to 32.9°	.90
33° to 35.9°	1.10
36° and above	1.25
Magnolia Petroleum Co.:	
*33° and above	1.25
Corsicana Light	1.25
Corsicana Heavy	.90
Mexia	1.25
Powell	1.25
Thrall	1.00

*Below 33° gravity, same as Prairie.

Prairie Oil & Gas Co. buying crude in new Wortham Pool at gravity basis.

Humble Oil & Refining Co.

Ranger:	
Below 30°	$ .90
30° to 32.9°	1.10
33° to 35.9°	1.25
36° and above	1.35
Mexia	1.25
Powell	1.25
Currie	1.25
Richland	1.25

*Wichita-Archer Counties and Moran, same as Prairie.

Gulf Coast

†Grade "A"	$1.50
†Grade "B"	1.25
Luling	.90
Laredo (Magnolia Petroleum Co.)	.75
Rockdale-Minerva (Milam County)	1.25
Calliham (Live Oak-McMullen)	1.53
*High Island	.85

*Posted by Sun Co.

†Following are the specifications for Gulf Coast Crudes as posted by Humble Oil & Refining Co.:

Grade "A"—Viscosity—Not less than 100 seconds at 100° F. Saybolt sulphur—Not over .4 per cent Baume gravity. Not over 25 at 60° F.

Cold test of distillates having viscosity of 1,000 seconds at 100° F., A. S. T. M. method.

Grade "B"—Embraces all coastal crude which does not meet the test for "A" Grade crude.

***Somerset**

26° and above	.95
Below 26°	.85

*Posted by Grayburg Oil Co.

California

14° to 19.9°	$1.00
20° to 20.9°	1.01
21° to 21.9°	1.02
22° to 22.9°	1.03
23° to 23.9°	1.05
24° to 24.9°	1.07
25° to 25.9°	1.10
26° to 26.9°	1.13
27° to 27.9°	1.16
28° to 28.9°	1.19
29° to 29.9°	1.22
30° to 30.9°	1.25
31° to 31.9°	1.28
32° to 32.9°	1.31
33° to 33.9°	1.34
34° to 34.9°	1.37
35° to 35.9°	1.40
36° to 36.9°	1.46
37° to 37.9°	1.52
38° to 38.9°	1.58
39° to 39.9°	1.64
40° to 40.9°	1.70
41° to 41.9°	1.76
42° and above	1.82

Eastern States

Penna Grade Oil in New York Transit Lines	$2.85
Bradford District Oil in National Transit Lines	2.85
Penna Grade Oil in National Transit Lines	2.75
Penna Grade Oil in Southwest Pa. Pipe Line Lines	2.75
Penna Grade Oil in Eureka Pipe Line Lines	2.75
Penna Grade Oil in Buckeye Pipe Line Lines	2.75
Cabell Grade Oil in Eureka Pipe Line Lines	1.45
Corning Grade Oil in Buckeye Pipe Line Lines	1.50
Somerset Medium Oil in Cumberland Pipe Line Lines	1.55
Somerset Light Oil in Cumberland Pipe Line Lines	1.70
Ragland Grade Oil in Cumberland Pipe Line Lines	.90
Lima	1.58
Wooster	1.40
Illinois	1.37
Indiana	1.38
Princeton	1.37
Plymouth	.75
Waterloo	.75
†Oil Springs, Canada	2.30
†Petrolia, Canada	2.23
*Western Kentucky, 36° and above	1.30
*Western Kentucky, 33° to 35.9°	1.20
*Western Kentucky, 32.9° and below Cumberland, Barren and Monroe Counties, (Kentucky) (Paragon Development Co.)	1.10
	1.70

†Plus Government bounty of 26½c.

*Prices for Warren, Allen, Hancock, and Ohio Counties by Indiana Refining Co. Prices for Warren and Simpson Counties by Paragon Development Co., same as Indian Refining Co.

Mexican Crude

*Tuxpam (f.o.b. Mexican ports)	$1.15
†Panuco (f.o.b. Mexican ports)	.95
Tuxpam (New York)	1.72
Panuco (New York)	1.38

*Plus 32.33c. †Plus 17.64c tax. Prices based on contracts.

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MEMBER AUDIT BUREAU OF CIRCULATION

A WORLD SURVEY OF OIL

The oil industry of America is entering a period of international competition such as it has never experienced. The first step in preparing to meet that competition is to inform ourselves about the resources and methods of our rivals.

A general knowledge of the production possibilities, the refining and marketing and transportation facilities at the command of the foreign companies, is essential to a working grasp of the world oil situation.

That information has been collected and digested in the World Survey of Oil included in this issue of The Oil and Gas Journal. The task of assembling this data has been undertaken with the thoroughness and dependability that readers of The Oil and Gas Journal have come to expect in this publication.

Here is presented in a big, comprehensive way every fact and figure you may conceivably want to know about oil in any part of the world. The fields of the East Indies are covered as completely and informingly as those of Mexico, of Persia as those of Venezuela.

Not the least interesting feature is the photographic and biographical section devoted to the personalities of the great European companies, the Anglo-Persian Oil Company, Ltd., and the Royal Dutch-Shell Company. Americans should know the sort of leaders they have to meet in world markets and fields.

The compilation showing the proportionate distribution of motor vehicles throughout the world contains startling figures, showing the enormous possibilities of expansion of the market for gasoline and lubricants as the other countries catch up with American methods of working and standards of living.

It is too generally assumed, without thought, that these other peoples are going to stand still indefinitely, that it is impossible to expect them to approach our standards. It is forgotten that their experiences during the war revolutionized the ideas of the peoples of Europe and indeed of the world at large upon the possibilities of living. It enlarged their horizon, increased their knowledge and stimulated their wants.

Everywhere the efficiency of America and the comfort and conveniences enjoyed by Americans is a goal to be sought. Foremost, of course, stands the advantages gained through the use of oil. Governments are anxious about assuring a supply in case of war but there is also increasing demand for everyday operations in industry and transportation.

The reduction or removal of import taxes on American cars in some European countries is in response to popular demand. The extension of American plants abroad is another indication. One of the best known American companies is adding to its plant at Copenhagen, Denmark, another at Stockholm, Sweden, to supply the Baltic countries and Russia, while in addition to the plant at Antwerp one is being established at Rotterdam, for Central Europe. A plant in Spain is to be erected to provide an outlet throughout the countries on the Mediterranean and through the Suez canal to the East.

Argentina is taking largely increased purchases and a factory branch has been set up in Santiago, Chile. A feature is the increase in the sale of tractors, particularly in the Scandinavian countries.

One of the chief hindrances to greater use of the motor car in Europe has been the high rate of domestic taxation, resulting in attempts to develop ineffective small horse power cars of the cycle type to escape it. There is a growing realization abroad that taxation which limits the availability of motorization really retards the efficiency of production and trade and should be avoided.

The efforts of Citroen, the French Ford, to increase the production of light cars is to be copied in Germany, where efforts are under way to start massed production of cheaper automobiles. Germany has nothing resembling the Ford or the Citroen cars, while the improving conditions of the middle classes there is believed to offer a big market.

The actual operation of motor car routes across the Arabian desert and the French announcement of a regular motor caravan service across the Sahara are the more spectacular illustrations of the extension of motor traffic into the highways and byways of the world.

Primarily we may expect a speedier development of the use of trucks and buses abroad than of the individual car, (the reverse of the process here) because the need for transport in many countries will outrun the ability of individuals to maintain their own. But of the ultimate motorization of them all there can be no doubt, their progress being in proportion to their industrial efficiency in turn dependent upon their employment of machinery using oil.

With that prospect there can be no risk in predicting immediate and continually enlarging demands upon America for petroleum products. Europe itself is fully awake to this need and desperately endeavoring to option production and facilities to assure it. The expansion in our exports this year is significant. Next year should be even more startling.

It was this conviction that led to the present assembling of the facts about the oil supplies and resources of the world in this publication. Every means and agency was resorted to in order to acquire the latest and most accurate information on the various fields.

The articles of our own correspondents in every field and market have been supplemented by contributions from leaders in the industry in every land who welcomed the opportunity to be represented in this World Survey.

As in every other enterprise attempted The Oil and Gas Journal in this instance believed that nothing can be too good for the oil industry and no effort has been spared to make the World Survey of Oil attractive as well as instructive and interesting.

The romance of the oil industry of which so much has been heard is nowhere more strikingly illustrated than in its world encircling ramifications, penetrating the remotest jungles and forests as does no other industry.

There is also the intriguing element of international rivalry and policies and politics, of which the possession of oil has come to be veritable center and mainspring.

The oil man who peruses the World Survey of Oil will be a better informed citizen, better qualified to grapple with the problems of his everyday business and have a more inspiring vision of the tremendous possibilities of the petroleum industry and its place in the progress of the world.

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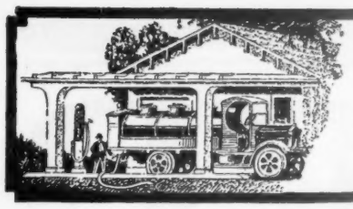


TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, Dec. 16

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Chicago District—				
†100 gals. or more	13.0	...	16.0	11.0
Tank wagon prices on April 10, 1922; g. up 1½c; May 8, g. up 1c; June 27, both up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 29, g. up 2c; Jan. 12, 1924, g. up 2c, k. up 1c; Feb. 5, g. up 2c, k. 1; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12, g. down 2c.				
Decatur, Ill.	13.2	...	15.2	11.5
East St. Louis	12.1	...	14.35	10.6
Joliet	13.4	...	15.4	11.7
Peoria	13.0	...	15.0	11.5
Quincy	13.2	...	15.2	11.3
Davenport, Ia.	13.5	...	15.5	11.9
Des Moines	13.5	...	15.5	11.9
Keokuk	13.5	...	15.5	11.9
Sioux City	13.0	...	15.0	11.5
Duluth, Minn.	14.5	...	16.5	12.6
Minneapolis	14.2	...	16.2	12.6
La Crosse, Wis.	14.2	...	16.2	12.4
Milwaukee	13.1	...	15.1	11.3
Madison	13.3	...	15.3	11.5
Detroit, Mich.	13.8	...	15.8	12.2
Grand Rapids	13.7	...	15.7	12.1
Saginaw	13.9	...	15.9	12.3
Evansville, Ind.	15.0	2.0	17.0	11.5
Fort Wayne	15.4	2.0	17.4	11.9
Indianapolis	15.2	2.0	17.2	11.7
South Bend	15.4	2.0	17.4	11.9
Fargo, N. D.	15.9	1.0	17.9	14.6
Huron, S. D.	17.0	2.0	19.0	13.1
Sioux Falls	15.0	2.0	17.0	12.6
*Kansas City, Mo.	13.9	1.0	15.9	10.3
*Springfield	13.8	1.0	15.8	11.2
*St. Louis	12.6	0.5	14.9	11.0
*St. Joseph	13.0	0.5	15.0	10.9
Wichita, Kans.	12.8	...	14.8	9.8
Bartlesville, Okla.	14.4	...	16.4	9.9

*City tax.
†Tank wagon price on less than 100 gallons, 14c.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Newark, N. J.	13.5	...	....	13.0
Atlantic City	13.5	...	....	13.0
Annapolis, Md.	15.0	2.0	17.0	12.0
Baltimore	15.0	2.0	17.0	11.0
Cumberland	15.0	2.0	17.0	12.5
Washington, D. C.	16.0	2.0	18.0	12.5
Norfolk, Va.	17.0	3.0	19.0	13.5
Petersburg	17.0	3.0	19.0	13.5
Danville	17.0	3.0	19.0	13.0
Richmond	17.0	3.0	19.0	13.5
Roanoke	17.0	3.0	19.0	13.5
Keyser, W. Va.	15.0	2.0	....	13.5
Charleston	16.0	2.0	....	12.5
Parkersburg	16.0	2.0	....	13.5
Wheeling	16.0	2.0	....	13.5
Charlotte, N. C.	15.0	3.0	....	13.5
Hickory	15.0	3.0	....	13.5
Mt. Airy	15.0	3.0	....	13.5
Salisbury	15.0	3.0	....	13.5
Charleston, S. C.	15.5	3.0	....	14.0
Columbia	15.5	3.0	....	14.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Atlanta, Ga.	17.0	3.0	20.0	11.0
Augusta	17.0	3.0	20.0	13.5
Macon	17.0	3.0	20.0	14.5
Savannah	14.0	3.0	17.0	13.0
Birmingham, Ala.	15.0	2.0	18.0	14.5
Mobile	14.0	2.0	17.0	12.5
*Montgomery	16.0	3.0	19.0	15.5
Clarksdale, Miss	15.0	3.0	18.0	12.0
Jackson	15.0	3.0	18.0	10.0
Natchez	14.5	3.0	17.5	11.5
Vicksburg	14.5	3.0	17.5	11.5
Jacksonville, Fla	15.0	3.0	18.0	13.0
Miami	17.0	3.0	20.0	14.5
Pensacola	15.0	3.0	18.0	13.5
Tampa	15.0	3.0	18.0	13.0
Lexington, Ky.	16.0	3.0	19.0	14.0
Covington	15.0	3.0	18.0	14.0
Louisville	15.0	3.0	17.0	12.0

*In addition to State tax of 2 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and ½ cent on kerosene.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Dallas, Tex.	10.0	1.0	13.0	10.0
Fort Worth	10.0	1.0	14.0	10.0
Houston	10.0	1.0	14.0	10.0
San Antonio	10.0	1.0	12.0	10.0
El Paso	10.0	1.0	14.0	11.0
Muskogee, Okla.	14.0	2.5	19.0	11.0
Oklahoma City.	14.0	2.5	17.0	11.0
Tulsa	12.0	2.5	15.0	10.0
Ft. Smith, Ark.	15.0	4.0	18.0	12.0
Little Rock	17.0	4.0	19.0	11.0
*Texarkana	16.0	4.0	19.0	10.0

*Does not include 1c additional tax.

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
San Francisco	15.0	2.0	18.0	15.5
Los Angeles	13.5	2.0	16.5	15.5
Fresno	15.5	2.0	18.5	17.5
Reno, Nev.	18.5	2.0	21.5	19.0
Portland, Ore.	16.0	3.0	19.0	16.5
Seattle, Wash.	15.0	3.0	18.0	16.5
Tacoma	15.0	2.0	18.0	16.5
Spokane	19.0	2.0	22.0	20.5
Phoenix, Ariz.	21.0	3.0	24.0	21.5

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Basin, Wyo.	17.0	1.0	....	14.0
Casper	15.0	1.0	17.0	12.0
Cheyenne	16.5	1.0	18.5	13.5
Cody	18.0	1.0	....	15.0
Lander	17.0	1.0	....	14.0
Albuquerque, N. M.	20.5	1.0	22.5	15.5
Salt Lake, Utah	20.0	2.0	22.0	17.0
Ogden	20.0	2.5	22.0	17.0
Denver, Colo.	14.0	2.0	16.0	13.5
Glenwood Spgs.	20.0	2.0	....	17.5
Pueblo	16.0	2.0	18.0	13.5
Billings, Mont.	18.5	2.0	20.5	14.5
Butte	20.0	2.0	22.0	15.0
Great Falls	20.0	2.0	22.0	16.0
Helena	20.0	2.0	22.0	16.0
Miles City	19.5	2.0	21.5	15.5
Missoula	21.0	2.0	23.0	16.0
Boise, Idaho	21.5	2.0	23.5	19.0
Idaho Falls	21.0	2.0	23.0	18.5

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
*Pittsburgh, Pa.	15.0	...	20.0	14.0
*Philadelphia	15.0	...	20.0	14.0
*Scranton	15.0	...	20.0	14.0
*Allentown	15.0	...	20.0	14.0
*Altoona	15.0	...	20.0	14.0
*Erie	15.0	...	20.0	14.0
Dover, Del.	17.0	2.0	20.0	14.0
Wilmington	17.0	2.0	20.0	14.0
Springf'ld, Mass.	15.0	...	18.0	13.0
Worcester, Mass	15.0	...	18.0	13.0
Boston	15.0	...	18.0	11.0
Providence, R. I.	15.0	...	18.0	13.0
Hartford, Conn.	16.0	1.0	19.0	12.0
New Haven, Conn.	16.0	1.0	19.0	13.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Albany, N. Y.	15.0	...	....	13.0
*New York	15.0	...	....	13.0
Buffalo	13.0	...	....	12.0
Rochester	15.0	...	....	13.0
Syracuse	15.0	...	....	12.0
Boston, Mass.	15.0	...	....	13.0
Providence, R. I.	15.0	...	....	13.0
Augusta, Me.	16.0	1.0	....	13.0
Manchester, N. H.	17.0	2.0	....	13.0
Burlington, Vt.	16.0	1.0	....	13.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station prices in its territory. In most cases the service station price is 2 or 3 cents higher than tank wagon price.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
Omaha	14.0	...	13.0	11.5
Crawford	14.0	...	....	12.25
McCook	14.75	...	16.75	13.0
Norfolk	13.75	...	15.75	12.0
North Platte	14.75	...	16.75	12.75
Scotts Bluff	14.25	...	16.25	12.25

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
New Orleans, La.	13.5	2.0	15.5	9.0
Alexandria	14.5	2.0	16.5	13.0
Baton Rouge	13.0	2.0	15.0	11.5
Lake Charles	14.5	2.0	16.5	13.0
Shreveport	14.5	2.0	16.5	13.0
Memphis, Tenn.	14.0	2.0	16.0	14.0
Chattanooga	15.0	2.0	17.0	14.5
Knoxville	16.5	2.0	18.5	15.0
Nashville	15.5	2.0	17.5	13.5
Bristol	17.0	2.0	19.0	13.5
Little Rock, Ark.	17.0	4.0	19.0	13.0

OHIO

Standard Oil Co. (Ohio)

	Gasoline Tank wagon	Incids tax of	Service station	Kero. Tank wagon
All Ohio points	15.0	...	17.0	14.0

TANK WAGON CHANGES

December 8.—The Continental Oil Co. advanced the gasoline tank wagon and service station prices 1½ cents and the kerosene tank wagon ½-cent at Albuquerque, N. Mex.

NORTH TEXAS MARKET BECOMES REACTIONARY

FORT WORTH, Tex., Dec. 15.—The North Texas gasoline market has been decidedly reactionary during the past few days. The slump in prices has been almost as sensational as the advances the last week in November and the first week in December. The 58-60 U. S. Motor grade has slumped to 8½ cents from a high of 9¼ cents a week ago and the higher gravities are also off ¼- to ½-cent with considerable material offered either for immediate spot shipment or delivery over the remainder of the month. The price is explained as a development of the fact that purchases both by domestic and export buyers have been conspicuous by their absence. The Magnolia Petroleum Co. and the Gulf Refining Co., both of which have been buying for their Texas stations, are out of the market and the export buying has been confined to purchases from marketers who were willing to sacrifice.

Natural gasolines are lower, the decline on all grades being from ¼- to ½-cent. There was little change in other products. Kerosenes are offered freely. Most refiners are well taken care of in their fuel and gas oil output and have not lowered their prices.

The M. K. & T. railroad is reported to have closed a contract with one of the large refiners of this area for fuel oil for delivery during 1925-1926. The contract is said to call for a delivery of 100 cars a month at a price based on crude, giving the seller a better proposition than has been customary to give the refiners in the past. Several other refiners have closed contracts with railroads. One reported contract gives the refiner a 10-cent premium over 60 per cent of the posted price of crude.

PENNSYLVANIA OIL MEN DESIRE HIGHER PRICES

FRANKLIN, Pa., Dec. 12.—Going on record in favor of cooperation between oil producer and refiner and urging a higher price for Pennsylvania grade crude oil, members of the Venango County branch, Pennsylvania Oil & Gas Men's Association, meeting here, discussed the problem of oil storage and the oil situation in general.

A motion presented by Walter W. Miller, of Franklin, was adopted as follows:

"That we agree to sell all our runs as run providing the oil is advanced immediately to $3.25 a barrel, and everybody disposes of his storage holdings, and sell either to Mr. Seep or the independent refiners and accept no outside premiums anywhere, for a 90-day period."

David B. McCalmont, chairman of the meeting and president of the Venango County branch, was authorized to appoint an executive committee, which in turn, is to appoint two other committees. One of these subcommittees will see the independent refiners, whose interests are recognized as being more or less in common with those of the producers, and see what can be done to improve the present situation, and the other is a committee on taxation with power to call the branch together again if it is thought desirable. The executive committee, in addition to other powers, is authorized to hear grievances of all producers.

Those who spoke at the meeting were George H. Torrey, Oil City; J. C. Kilgore, Franklin; D. B. McCalmont, Franklin; W. D. Doyle, Franklin; W. J. Duffee, Franklin; B. F. Brundred, Oil City; H. J. Crawford, Emlenton; Lee A. McCracken, Oil City, and Walter W. Miller of Franklin.

Lucey Corp. of Tenn. Is Not Affected by Bankruptcy Action

The Lucey Manufacturing Corp. of Tennessee, manufacturer of oil field equipment, is an independent concern owned by a group of Chattanooga men and has no connection whatever with the Lucey Manufacturing Corp. of New York and is in no way affected by the bankruptcy proceedings now under way in New York. Some misunderstanding seems to have arisen regarding the bankruptcy proceedings and the above statement was issued by a representative of the Tennessee company.

NEED FOR WORLD OUTLOOK

I think one of our troubles throughout all this great Mississippi River watershed is that we are too provincial; we look too close to home. We are too taken up with our own problems and not realizing how intimately they are interwoven with international affairs. We hear a great deal about not getting mixed up in the problems of Europe. Why, gentlemen, we are so deeply mixed up that it is our business to take a look abroad.—Edward Prizer, chairman of Board, Vacuum Oil Co., to American Petroleum Institute meeting at Fort Worth, Texas.

GERMANS BUYING OIL

HOUSTON, Tex., Dec. 15.—Large purchases of crude petroleum and its products will be made in Texas by German Overseas Petroleum Corp., according to Walter Josky, president. He said his company this year purchased approximately $5,000,000 of American crude and refined oils. Purchases for 1925 will exceed this sum. The German Overseas Petroleum Corp. plans to install American type of filling stations in Germany, Mr. Josky said. "It will start by building three or four stations in each of the European metropolis such as Hamburg, Berlin, Munich and Vienna."

WORTHAM CRUDE TEST

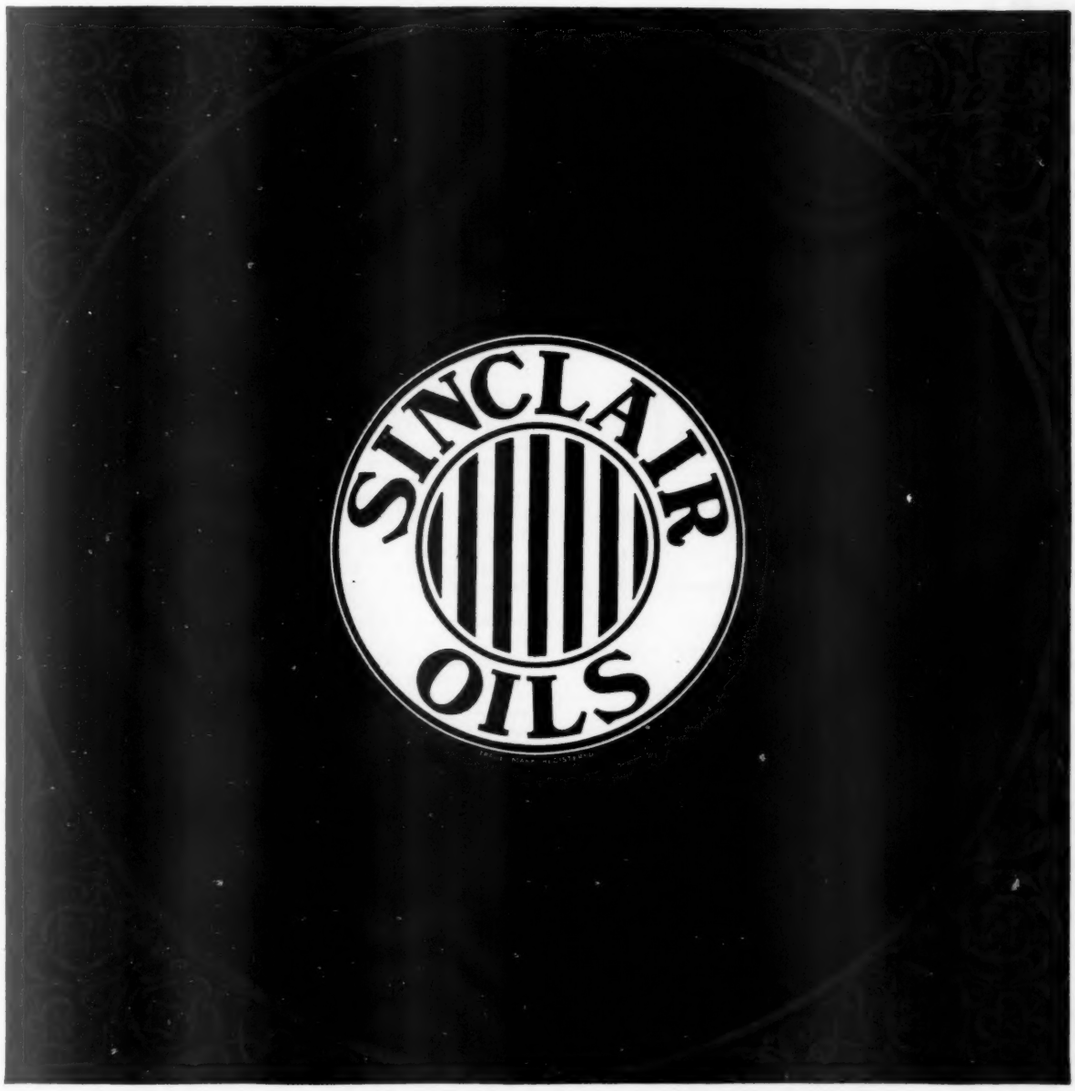
The crude of the new Wortham Pool in Texas is high in kerosene content with an approximate 30 per cent content of gasoline suitable for motor fuel, according to a Bureau of Mines analysis. A distillation test by the Government bureau showed the following results: Gasoline, 29.3 per cent of 55.6 degrees Baume; kerosene, 28.7 per cent of 44.8 degrees Baume, and bottom, 41.0 per cent of 21.7 degrees gravity fuel oil.

DISTILLATE ADVANCED

CHICAGO, Dec. 10.—The Roxana Petroleum Co. has advanced its tank wagon prices for distillate ½ cent a gallon. The new prices are 9 cents for the straw and 10 cents for prime white distillate in 200 gallon dumps. For smaller quantities ½ cents addition is charged. The headquarters here report a capacity demand for the product.

POSTAGE ON THIS ISSUE

For the information of readers who may desire to mail copies of The Oil and Gas Journal World Survey of Oil the postage in the United States and to Canada, Mexico and South America, except Chile and Venezuela, on this issue is 7 cents; to other countries abroad 13 cents.



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SINCLAIR OILS

North-Central Texas Field

By Dan F. Dugan

Gain in production due largely to wildcats. Reagan County wells and South Vernon Pool show good increases. Archer County completes 21 producers during week. Texhoma Oil & Refining Co.'s No. 10 Hausler, near completion, flowing 400 barrels, and Stidham and other's No. 9 White flowing 450 barrels.

FORT WORTH, Tex., Dec. 13.—The North Central Texas oil fields showed another gain in production this week, accounted for largely by the increased oil runs from some of the wildcat districts. The total average daily production for the week amounted to 133,870 bbls., compared with 132,865 bbls. the previous week, a gain of 1,005 bbls.

The wildcat districts showed a gain of 1,365 bbls. Reagan and Wilbarger Counties showed the most substantial increase, in Wilbarger County coming from a number of new connections in the South Vernon Field and in Reagan County from the completion of the Big Lake Oil Co.'s No. 13 University. Production from Wilbarger County this week totals 5,495 bbls., compared with 4,875 bbls. last week and Reagan County shows a total of 8,625 bbls. against 7,285 bbls. last week.

Other fields that showed increases in production were the Burkburnett and Electra Pools, both in Wichita County. Burkburnett gained 355 bbls. and Electra showed an increase of 435 bbls. The Iowa Park district, including Archer County, showed a loss of 520 bbls. while Stephens and Eastland Counties registered a loss of 285 bbls. each.

PRODUCTION REPORT

Week Ending December 11, 1924

Burkburnett		
Barkley & Meadows	600	
Humble Oil & Ref. Co.	495	
Gulf Production Co.	745	
Magnolia Petroleum Co.	3,010	
McMan Oil Co.	350	
Panhandle Refining Co.	335	
Prairie O. & G. Co.	25	
Sinclair O. & G. Co.	55	
The Texas Co.	490	
Texhoma O. & R. Co.	435	
Miscellaneous	10,350	
Total		16,890
Electra		
Empire Gas & Fuel Co.	1,200	
Humble Oil & Ref. Co.	170	
Griswold Oil Co.	255	
Gulf Production Co.	890	
Magnolia Petroleum Co.	4,275	
McMan Oil Co.	180	
Panhandle Refining Co.	80	
The Texas Co.	4,045	
Texhoma Oil & Ref. Co.	2,045	
Miscellaneous	6,235	
Total		19,375
Iowa Park, Etc.		
Griswold Oil Co.	60	
Gulf Production Co.	35	
Humble Oil & Ref. Co.	10	
Panhandle Oil & Ref. Co.	60	
Miscellaneous	3,410	
Archer County—		
Empire Gas & Fuel Co.	720	
Griswold Oil Co.	510	
Gulf Production Co.	2,135	
Humble Oil & Ref. Co.	200	
Magnolia Petroleum Co.	515	
Panhandle Ref. Co.	3,410	
Prairie Oil & Gas Co.	1,115	
The Texas Co.	680	
Texhoma Oil & Ref. Co.	3,365	
Miscellaneous	27,120	
Petrolia—		
Gulf Production Co.	40	
Magnolia Petroleum Co.	20	
The Texas Co.	70	
Miscellaneous	220	
Total		43,695
Stephens County		
Empire G. & F. Co.	50	
Gulf Production Co.	1,315	
Humble Oil & Ref. Co.	1,045	
Magnolia Petroleum Co.	665	
Mid-Kansas Oil & Gas Co.	2,065	
Prairie Oil & Gas Co.	1,060	
Sinclair Oil & Gas Co.	105	
The Sun Co.	315	
The Texas Co.	1,850	
Texas Pacific Coal & Oil Co.	1,060	
Miscellaneous	6,855	
Total		16,385
Eastland County		
Gulf Production Co.	370	
Humble Oil & Ref. Co.	95	
Magnolia Petroleum Co.	480	
Panhandle Ref. Co.	340	
Prairie Oil & Gas Co.	670	
Sinclair Oil & Gas Co.	385	
The Texas Co.	275	
Texas Pacific Coal & Oil Co.	915	
Miscellaneous	2,340	
Total		5,870
Other Fields		
Strawn—		
Texas Pacific Coal & Oil Co.	215	
Miscellaneous	470	
Moran—		
Empire Gas & Fuel Co.	65	
Humble Oil & Ref. Co.	380	
The Texas Co.	140	
Texhoma Oil & Ref. Co.	140	
Miscellaneous	2,005	
Coleman County—		
Miscellaneous	65	
Brown County—		
Miscellaneous	715	
Comanche Eastland—		
Humble Oil & Ref. Co.	210	
Magnolia Petroleum Co.	1,150	
Mid-Kansas Oil & Gas Co.	425	
Sinclair Oil & Gas Co.	45	
The Texas Co.	175	
Texas Pacific Coal & Oil Co.	145	
Miscellaneous	3,185	
Young County		
Gulf Production Co.	90	
Sinclair Oil & Gas Co.	440	
Panhandle Refining Co.	190	
The Texas Co.	45	
Miscellaneous	2,985	
Mitchell County	1,550	
Reagan County	8,625	
Jack County	25	
Scurry County	45	
Carson County	985	
Hutchinson County	195	
Callahan County	1,455	
Wilbarger County	5,495	
Total		31,655
Total this week		133,870
Total last week		132,865
Gain		1,005

The fields show a total of 62 completions this week against 58 for last week, a gain of four. Out of the 62 completions 33 were oil producers, two gas wells and 27 dry holes. New production amounted to 6,350 bbls. or an average of little over 192 bbls. per new well. New production the previous week was 8,375 bbls. from 40 new oil wells. The 27 dry holes finished this week compare with 16 the week before. The two gas wells compare with a like number for the previous week.

Archer County Led

As to be expected Archer County led in new completions, accounting for 36 compared with 28 last week. Of the 36 this week 21 were oil wells and 15 dry holes. Wichita County reported only six new wells, three oil wells and three dry holes. New production totaled only 150 bbls. Young County had four completions, two oil wells, with an aggregate daily flush output of 325 bbls., and two dry holes. Stephens County accounted for only three completions, two producers with a combined production of 60 bbls. and one dry hole. Eastland County also had three completions, two oil producers with new production amounting to 140 bbls. There was one dry hole.

The wildcat districts reported 10 completions during the week, only three oil producers. There were two gas wells and five dry holes. All three wildcat producers were in the South Vernon Field of Wilbarger County. The wildcat area also accounted for two gas wells with a combined daily output of 4,000,000 feet. One of these was Larkins and others' No. 1 Richards in Throckmorton County making 2,000,000 feet of gas daily and the other Dittman and others' No. 1 Bigler in Palo Pinto County, also making 2,000,000 feet daily.

Nearing Completion

There are several wells in the various fields nearing completion. In Wichita County the Texhoma Oil & Refining Co. and others' No. 2-B Burnett is reported to be swabbing 70 bbls. in 12 hours from the sand at 1,820 feet.

In Archer County Murchison and others' No. 2-C Harmel is reported a near completion, making an estimated 200 bbls. from sand at 1,280 feet. The same company's No. 4-C Harmel is also making an estimated 200 bbls. daily from sand at 1,275 feet. In the same section the Texhoma Oil & Refining Co. has two new producers not yet listed among the completions. They are No. 9 Hausler, reported flowing around 150 bbls. daily and No. 10 Hausler reported flowing 400 bbls. from sand at the regulation depth.

In the north half of Archer County Stidham and others' No. 9 White is producing. It got the top of the pay sand at 1,603 feet and drilled in 10 feet. It is now reported flowing at the rate of about 450 bbls. a day.

Chenault and others are about to open up some new territory in this county with their No. 1 Lane, just north of the southwest corner of the Bell County school survey. They are bailing a sand at 1,440 to 1,445 feet showing for about 75 bbls. a day.

In northern Young County, adjacent to the south Archer Field Burton and others are developing a nice showing of production in their No. 1 Campbell at 965 to 975 feet. No estimate has been made of the production. The well is about 2 miles due east of the Litchfield producer.

The Humble Oil & Refining Co. is reported to have purchased from Litchfield and others a 40-acre lease out of the Campbell land in northern Young County together with one producing well for a price of $50,000 and other considerations. It is announced the Humble will begin immediately an intensive development of the newly acquired property.

Texas Co. Pipe Line

The Texas Co. is to start construction immediately on a 6-inch pipe line from its main station in the north half of Archer County to the newly developing pools in the southern part of that county. The line will have a length of 22 miles and will embrace the Swastika Pool, and then extend to the Carey, Hausler, Ragle and probably the Harmel areas in the southern part of the county.

This section of Archer County, including the wells adjacent in the extreme northern part of Young County, is estimated to have a daily production at this time of 22,000 bbls. daily.

In the Southern Vernon Pool of Wilbarger County there are number of wells nearing completion. Among them is Bridwell and others' No. 5 Stephens, reported flowing at the rate of 400 bbls. daily from sand at 1,825 to 1,835 feet. Kolp and others' No. 1 Waggoner is also making oil. It is swabbing an estimated 225 bbls. a day from sand at 2,020 feet. In the same pool the Petroleum Producer's Co.'s No. 2 Dill is swabbing an estimated 95 bbls. daily from sand at 2,040 feet.

Lesh and others' No. 1 Salmon, a wildcat 9 miles north of the town of Nocona in Montague County, is reported showing some oil at 930 feet. Oil rose 300 feet in the hole, but there was only 5 feet of pay and it is reported the well will probably be drilled deeper.

According to reports from the Panhandle country drilling has been resumed on Holmes and others' No. 2 Morse, north of the town of McLain in Gray County. The No. 1 Burnett of the Premier Oil Corp. (formerly Greenwood and others) in Carson County, has resumed drilling after being shut down for several weeks.

Wichita County Completions

Brewer and others' No. 1 Hensen, dry at 2,140 feet; Drillers Development Co.'s No. 5 Douglas, pumping 10 bbls. at 1,050 feet; Elliott and others' No. 2 Grace Jennings, dry at 2,010 feet; L. J. K. Oil Co.'s No. 1 Hensen, dry at 1,740 feet; Parker Brothers' No. 1 Love, 15 bbls. at 1,810 feet; Perkins and others' No. 11 Burnett, 125 bbls. at 1,595 feet.

Archer County Completions

Anderson and others' No. 2 Hughes, dry at 625 feet; Barkley and others' No. 5 Wilson, dry at 1,640 feet; Franklin and others' No. 1-B Parrish, 95 bbls. at 1,550 feet; Humphries and others' No. 11 White, 180 bbls. at 1,610 feet; Lane and others' No. 4 White, 45 bbls. at 1,815 feet; Long and others' No. 1 Kemp & Kempner, dry at 1,940 feet; Magnolia Petroleum Co.'s No. 8 Parrish, 125 bbls. at 1,600 feet; Oil Investment Co.'s No. 2 fee, pumping 140 bbls. at 1,105 feet; Robertson and others' No. 5 White, 220 bbls. at 1,600 feet; Consolidated Oil Co.'s No. 2-E Ragle, 300 bbls. at 1,095 feet; Cullum and others' No. 4 Bridwell, dry at 1,160 feet; Gwynn and others' No. 2 Rogers, 200 bbls. at 1,290 feet; Grisham and others' No. 4 Davis, 200 bbls. at 1,090 feet; Hardesty and others' No. 1 Hausler, dry at 1,200 feet; Harvey and others' No. 1 Kunkel, dry at 1,500 feet; Humble Oil & Refining Co.'s No. 1 Hausler, dry at 1,145 feet; same company's No. 2 Ragle, 25 bbls. at 1,100 feet; Maer and others No. 4 Bridwell, dry at 1,200 feet; same company's No. 5 Bridwell, 100 bbls. at 1,135 feet; Magnolia Petroleum Co.'s No. 1 Robertson, dry at 2,330 feet; Melat and others' No. 4 Goldsmith, 100 bbls. at 1,360 feet; McJunkin and others No. 1 Falls County School Land, dry at 1,540 feet; Murchison and others' No. 2-A Harmel, 280 bbls. at 1,295 feet; same company's No. 3-C Harmel, 140 bbls. at 1,285 feet same company's No. 3 Griffin, 160 bbls. at 1,295 feet; same company's No. 5 Griffin, dry at 1,330 feet; Petroleum Producers Co., No. 2 Bridwell, 400 bbls. at 1,125 feet; Ray and others' No. 3 Hausler, 250 bbls. at 1,130 feet; same company's No. 5 Hausler, 300 bbls. at 1,135 feet; Saunders and others' No. 3 Logan, dry at 1,300 feet; Sun Oil Co.'s No. 3 Green, 225 bbls. at 1,080 feet; The Texas Co.'s No. 2 Jeske, dry at 1,425 feet; Texhoma Oil & Refining Co.'s No. 6 Hausler, dry at 1,405 feet; same company's No. 7 Hausler, dry at 1,200 feet; Underwood Drilling Co.'s No. 2 Rogers, 55 bbls. at 1,295 feet; Wollett and others' No. 1 Griffin, 160 bbls. at 1,305 feet.

Young County Completions

Herbert Drilling Co.'s No. 1 Johnson, dry at 2,920 feet; McGarr and others' No. 1 Johnson, 150 bbls. at 4,280 feet; Reed and others' No. 1 Campbell, dry at 1,305 feet; Sims Oil Co.'s No. 1 Willis, 175 bbls. at 3,985 feet.

Stephens County Completions

Hoffer Oil Corp.'s No. 1 Webb, dry at 3,785 feet; Swensondale Oil Co.'s No. 1 Echols, 10 bbls. at 3,280 feet; Mook Texas Oil Co.'s No. 2 Head, 50 bbls. at 2,130 feet.

Eastland County Completions

Magnolia Petroleum Co.'s No. 6 Harris, 130 bbls. at 1,445 feet; Williamson and others' No. 4 Fox, pumping 10 bbls. at 1,180 feet; Beeler and others' No. 1 Huestes, dry at 1,010 feet.

Baylor County Completions

Crittenden and others' No. 1 Hawkins, dry at 2,035 feet.

Montague County Completions

Texhoma Oil & Refining Co.'s No. 1 Cato, dry at 2,560 feet.

Wilbarger County Completions

Bridwell and others' No. 4 Stephens, flowing 900 bbls. at 2,040 feet; Prince Brothers' No. 1 Zipperle, dry at 2,070 feet; Wells and others' No. 1 Waggoner,

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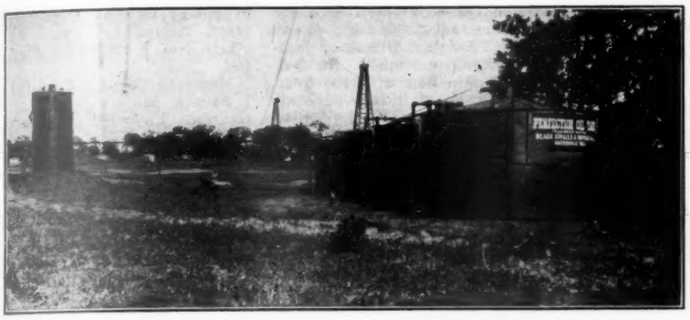

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Throckmorton County Completions

Larkin and others' No. 1 Richards, 2,000,000 feet of gas at 750 feet.

Palo Pinto County Completions

Broderick and others' No. 1 Moseley, dry at 4,005 feet; Talbert and others' No. 1 Slimp, dry at 1,100 feet; Dittman and others' No. 1 Bigler, 2,000,000 feet of gas at 3,680 feet.

Wichita County Drilling

Magnolia Petroleum Co.'s No. 108 Reilly, cleaning out at 1,265 feet; the Ascot Co.'s No. 26 Roller, drilling in shale at 1,800 feet; Burnett Ranch Oil Co.'s No. 9 Burnett, drilling in shale at 1,580 feet; Empire Gas & Fuel Co.'s No. 6 Pierce, drilling in shale at 1,500 feet; Hughes and others' No. 1 Ferguson, drilling at 1,710 feet; Magnolia Petroleum Co.'s No. 66 Honaker, spudding; same company's No. 8-A Waggoner, drilling in shale at 1,550 feet; Ryan Petroleum Co.'s No. 2-A Nance, cleaning out at 1,685 feet; Trimutual Oil & Gas Co.'s No. 7 Ward and Todd, drilling at 1,600 feet.

Archer County Drilling

Staley and others' No. 4 K. & K., drilling an oil sand at 1,775 feet; Electra Gulf Oil Co.'s No. 1 Andrews, spudding; Magnolia Petroleum Co.'s No. 9 Parrish, has oil showing at 1,595 feet; Magnolia Petroleum Co.'s No. 11 Parrish, drilling in shale at 1,525 feet; McCarty Oil Co.'s No. 5-B Wilson, spudding; Murchison and others' No. 5 White has oil showing at 1,590 feet; Phillips and others' No. 4 Wilson, drilling out plug at 1,515 feet; Ramming and others' No. 5 Wilson, bailing at 1,595 feet; Riner and others' No. 3-A Wilson, drilling at 1,700 feet; Robertson and others' No. 15 White, drilling in shale at 1,580 feet; same company's No. 16 White, drilling in shale at 1,510 feet; Simms Oil Co.'s No. 4 Parrish, drilling at 1,580 feet; Cochran and others' No. 1 Anderson, drilling in shale at 1,600 feet; Christie Brothers' No. 1 Hayter, spudding; Consolidated Oil Co.'s No. 7-B Ragle has oil showing at 1,095 feet; Humble Oil & Refining Co.'s No. 1 Hayter, spudding; same company's No. 1 Stampfil, spudding; same company's No. 1 Wood has oil showing at 1,290 feet; Murchison and others' No. 8 Griffin, spudding; same company's No. 3 Wood, topped sand at 1,290 feet; Mutual Oil Co.'s No. 3 Harmel, topped a sand at 1,260 feet; Petroleum Production Co.'s No. 5 Rogers, bailing at 1,275 feet; Ray and others' No. 8 Hausler, spudding; Stump Oil & Gas Co.'s No. 1 Ward, bailing at 1,095 feet; Williott and others' No. 1 Griffin, making oil at 1,305 feet; same company's No. 2 Griffin, spudding; Young and others' No. 1 Campbell, fishing at 1,240 feet.

Young County Drilling

Burton and others' No. 1 Campbell, bailing at 965 feet; Camp Oil & Gas Co.'s No. 1 Davis, spudding; Cheney and others' No. 1 Harrison, drilling in lime at 2,750 feet; Christie Brothers' No. 3 McLaren, drilling at 2,250 feet; Jones and others' No. 1 Jeffrey, drilling a sand at 945 feet; Keener Oil & Gas Co.'s No. 1 Marshall, drilling at 2,445 feet; Murchison and others' No. 1 Campbell, drilling a sand at 1,045 feet; Olney Production Co.'s No. 1 Kemp has oil at 1,115 feet; Pois and others' No. 1 Dietrich, spudding; Union Oil Co.'s No. 1 Keathley, drilling in lime at 3,420 feet; Vance and others' No. 1 Dawes, drilling at 2,920 feet.

Stephens County Drilling

A. B. Oil Association's No. 1 Bascom, drilling at 2,520 feet; Mid-Kansas Oil & Gas Co.'s No. 3 Hill, Acct. 2, drilling at 1,750 feet; same company's No. 11 Tullos, Acct. 1, drilling in lime at 3,290 feet; same company's No. 2 Williams, Acct. 2, drilling at 2,995 feet; Pender Production Co.'s No. 3 Keel, drilling at 2,350 feet; Pierce and others' No. 1 Crudington, drilling in lime at 3,620 feet; Prairie Oil & Gas Co.'s No. 15 Atkins, fishing at 3,260 feet; same company's No. 2 Caldwell, drilling at 2,960 feet; Snowden & McSweeney's No. 8 Ackers, cleaning out at 3,040 feet; same company's No. 5 Higginbotham, fishing at 3,175 feet; Texas Consolidated Oil Co.'s No. 6 Martin, drilling at 2,640 feet; Buckeye Development Co.'s No. 8 Walker, drilling at 2,500 feet; Clark and others' No. 1 Post, fishing at 1,450 feet; Cobb and others' No. 1 Simmons, drilling at 1,790 feet; Fouts and others' No. 1 McClesky, fishing at 3,580 feet; Knox and others' No. 1 Flournoy has gas showing at 3,870 feet; Lewis Oil Co.'s No. 1 Brown, drilling in lime at 3,000 feet; Magnolia Petroleum Co.'s No. 9-C Brosh, fishing at 3,810 feet; same company's No. 7 J. W. Brown, fishing at 3,190 feet; same company's No. 8 J. W. Brosh, drilling at 2,860 feet; same company's No. 5 McCarty, fishing at 3,340 feet; Price and others' No. 4 Bruce, drilling at 2,010 feet; Schimmell and others' No. 1 Watson, drilling at 2,350 feet; States Oil Corp.'s No. 1 Boles has gas showing at 3,690 feet; Sun Oil Co.'s No. 6 Stoker, fishing at 3,130 feet; The Texas Co.'s No. 10 Curry, fishing at 3,220 feet; Texas Pacific Coal & Oil Co.'s No. 1 Veale, drilling at 3,380 feet; Triplehorn Petroleum Co.'s No. 1 Adams, drilling at 4,000 feet.

Eastland County Drilling

Dorothy Oil Co.'s No. 1 Elliott is cleaning out at 1,850 feet; Eby and others' No. 6 Miller, spudding; Gallagher and others' No. 1 Goodwin, spudding; Magnolia Petroleum Co.'s No. 7 Barnes, drilling in lime at 3,535 feet; same company's No. 4 Rogers, drilling at 2,110 feet; Parsons and others' No. 1 Scott, has gas showing at 3,105 feet; Reclamation Oil Co.'s No. 6 Bond, fishing at 2,195 feet; Root and others' No. 1 Wheeler, drilling in lime at 3,290 feet; States Oil Corp.'s No. 8 Quiett, drilling at 3,410 feet; Burkett and others' No. 1 Stanton, spudding; Eastland Oil Co.'s No. 1 Hazel, spudding; same company's No. 1 Jordan, drilling at 2,200 feet; Knox-Lewis Oil Co.'s No. 1 White, drilling at 2,175 feet; McMeans and others' No. 1 Storm, underreaming; Riley and others' No. 1 McClelland has gas showing at 2,250 feet; Rosenfield and others' No. 1 Burnett, testing a sand at 3,205 feet; Root and others' No. 1 Ammerman, drilling at 2,700 feet; same company's No. 1 Hart, has oil and gas showing at 3,230 feet.

Wildcats Drilling

Hutchinson County—Dixion Creek Oil Co.'s No. 1 Smith is underreaming; Douglas Oil Co.'s No. 1 Whittenburg, drilling at 2,875 feet; Amarillo Oil Co.'s No. 2-B Bivens, cleaning out at 2,605 feet; Prairie Oil & Gas Co.'s No. 1 Shaw, has gas showing at 2,425 feet; Twin Six Oil Co.'s No. 1 Kingsland has gas showing at 2,880 feet; Wilson and others' No. 1 Whittenburg has oil showing at 2,905 feet.

Carson County—American Refining Co.'s No. 3 Burnett has gas showing at 2,400 feet; Crosby Oil & Gas Co.'s No. 1 Burnett, drilling in lime at 2,365 feet; Culbertson Brothers' No. 1 Armstrong, has oil showing at 3,175 feet; Gates Oil Co.'s No. 1 Burnett, drilling at 3,000 feet; Marland Oil Co.'s No. 1 Burnett, drilling in lime at 2,460 feet; Olson Brothers' No. 1 Burnett, drilling by junk at 2,500 feet; Silk and others' No. 3-A Burnett, drilling in lime at 2,410 feet; Skelly Oil Co.'s No. 2 Burnett, drilling at 2,005 feet.

Gray County—Clark and others' No. 1 Combs and Worley, fishing at 2,250 feet; Holmes and others' No. 2 Morse, fishing at 2,390 feet.

Wilbarger County—Barkley and others' No. 1 Stephens, drilling at 1,400 feet; Bridwell and others' No. 5 Stephens, drilling at 1,630 feet; same company's No. 1 Waggoner, drilling at 700 feet; Electra Gulf Oil Co.'s No. 1 Bond, drilling at 700 feet; Hamilton and others' No. 1 Keester, drilling at 1,400 feet; Humble Oil & Refining Co.'s No. 1 Castlebury, drilling at 1,045 feet; Klop and others' No. 1 Waggoner, rigging to pump; Levy and others' No. 1 Waggoner, drilling at 400 feet; Little Oil Co.'s No. 1 Youngblood, drilling at 970 feet; Magnolia Petroleum Co.'s No. 66 Houston & Texas Central, drilling at 450 feet; same company's No. 6 Sumner, drilling at 795 feet; McCamey and others' No. 1 Richardson, fishing at 2,060 feet; same company's No. 1 Stephens, fishing at 1,475 feet; Mulligan and others' No. 1 Waggoner, drilling at 900 feet; Oklahoma Texas Refining Co.'s No. 1 Bowers, drilling at 1,610 feet; Oxford Oil Co.'s No. 1 Waggoner, drilling at 700 feet; Petroleum Production Co.'s No. 1 Dill, rigging to pump; Ray and others' No. 2 Bond, drilling at 1,530 feet; same company's No. 3 Bond, drilling at 1,400 feet; same company's No. 4 Bond, drilling at 700 feet; Skinner and others' No. 1 Streit, drilling at 750 feet; South Vernon Oil Co.'s No. 1 Stephens standardizing; same company's No. 5 Stephens standardizing; same company's No. 6 Stephens, drilling at 660 feet; same company's No. 7 Stephens, drilling at 650 feet; same company's No. 9 Stephens, drilling at 330 feet; same company's No. 11 Stephens, spudding; Staley and others' No. 1 Waggoner, drilling at 940 feet; Tippit and others' No. 1 Sheldon, drilling at 1,730 feet; Waggoner and others' No. 1 Bond, drilling at 2,000 feet; Winnipeg Oil Co.'s No. 4 Bond, drilling at 1,200 feet.

Cottle County—Woodley and others' No. 1 Dulaney, drilling in lime at 2,000 feet.

Clay County—Evans and others' No. 1 Culver, drilling in lime at 1,820 feet; Knox and others' No. 4 Scott, rigging to pump; Sullivan and others' No. 2 Scott, rigging to pump; Somers and others No. 1 Parker, drilling at 1,270 feet.

Montague County—Boyd Oil Co.'s No. 1 Salmon, has oil showing at 900 feet; Guaranty Fund Oil Co.'s No. 1 Jordan, fishing at 3,465 feet; Lesh and others' No. 1 Salmon, cleaning out at 820 feet; Petroleum Production Co.'s No. 1 Howard, drilling in lime at 1,240 feet; The Texas Co.'s No. 2-A Gist is drilling deeper.

Throckmorton County—Clark and others' No. 1 McCarson, drilling at 1,320 feet; Hamilton and others' No. 1 Odell, drilling at 2,630 feet; Larkin and others' No. 1 Conger, cleaning out at 1,430 feet; Larkin and others' No. 2 Richards, drilling at 200 feet; McNeil and others' No. 1 Davis, drilling at 1,035 feet.

Shackelford County—Humble Oil & Refining Co.'s No. 1 Green, drilling at 2,340 feet; Magnolia Petroleum Co.'s No. 4 George, fishing at 3,390 feet.

Palo Pinto County—Singleton and others' No. 1 Smith, drilling at 640 feet; Hughes and others' No. 1 Belding, drilling at 3,520 feet; same company's No. 2 Weldon, drilling at 3,430 feet; Britton and others' No. 3 Strawn Coal Co., drilling at 1,885 feet; Cameron and others' No. 2 Pollard, drilling at 360 feet; Moore and others' No. 1 Stuart, drilling at 480 feet; Pender Production Co.'s No. 2 Slemmons, drilling at 3,300 feet; Wickens and others' No. 1 Williams, drilling at 1,770 feet.

Callahan County — Kellogg Drilling Co.'s No. 1 Snyder, drilling at 2,530 feet; Pope and others' No. 4 Bryson, drilling at 2,060 feet; Prewitt and others' No. 1 G. F. Crone, drilling at 1,620 feet; same company's No. 2 G. F. Crone, drilling at 880 feet; Seaboard Oil & Gas Co.'s No. 2-A Isenhower, drilling at 500 feet.

Mitchell County—Eddleman and others' No. 1 Gist, drilling by tools at 2,880 feet; California's No. 1 Clark, drilling at 2,820 feet; same company's No. 5 Miller, drilling at 2,800 feet; same company's No. 7 Abrams has oil showing at 3,080 feet; Morrison and others' No. 1 Kennard, cleaning out at 3,045 feet; Sloan and others' No. 3 Miller, drilling at 1,000 feet.

Brown County—Canyon Oil & Gas Co.'s No. 1 Ellsbury, drilling at 570 feet; New Era Oil Co.'s No. 3 Prather, drilling at 800 feet; Slick and others' No. 1 Chambers, drilling at 2,370 feet; Stone and others' No. 2 Gunn, drilling at 985 feet; Ward Oil Co.'s No. 1 Windham, drilling at 900 feet.

Comanche County—Cox and others' No. 1 Sturkie, drilling at 2,730 feet.

Reagan County—Arkansas Fuel Oil Co.'s No. 1 University, fishing at 3,255 feet; Big Lake Oil Co.'s No. 14 University, drilling at 2,810 feet; same company's No. 15 University, standardizing at 2,825 feet; Brandon and others' No. 1 University, cleaning out at 460 feet; California Co.'s No. 1 University, drilling at 1,650 feet; Grayson and others' No. 1 University, drilling at 375 feet; Mid-Kansas Oil & Gas Co.'s No. 1 University, drilling at 1,095 feet; Texon Land & Development Co.'s No. 1, Acct. 2, University, drilling at 4,010 feet; same company's No. 2, Acct. 2, drilling at 2,875 feet; same company's No. 3, Acct. 1, University, drilling at 2,475 feet; Transcontinental Oil Co.'s No. 1 University, drilling at 2,950 feet; University Oil Co.'s No. 1 University, drilling at 2,145 feet.

Pecos County—Arkansas Fuel Oil Co.'s No. 1 Blackstone, drilling at 470 feet; Transcontinental Oil Co.'s No. 1 Sherbino, drilling at 900 feet.

Vale Verde County—Hodges and others' No. 1 Harrison, drilling at 1,080 feet; Rio Bravo Oil Co.'s No. 1 Moore, drilling at 1,280 feet.

News of Mexican Fields

By George Blardone

TAMPICO, Mexico, Dec. 13.—There were 48 wells completed in the several pools in Mexico during the month of November, of which 39 are listed in the northern fields and 9 in the light gravity south fields. New potential flush production secured during the month totals 86,515 bbls., of which 19,465 bbls. belongs to the northern fields, and 67,050 bbls. belongs to the south fields. Wells completed as producers in the northern fields totaled 13; in the south fields 8—a total of 21 producers in a list of 48 completions.

The best well of the past week (apart from the Mexican Petroleum's No. 1 Chapacao already reviewed), is La Corona Petroleum Co.'s No. 144, Lot 4, Cacalilao sector of the northern fields. This well is rated good for 3,000 bbls. at a depth of 1,825 feet. The only other completions in the Cacalilao sector were failures, International Petroleum Co.'s No. 72, Lot 3, being one at 1,987 feet, and the second one being Transcontinental Petroleum Co.'s No. 125, in Lot 4, at 2,150 feet. In the old Camolote sector of the Panuco Field, Caltex Oil Co. scored a 500-bbl. well in its No. 6, Lot 6 there, at a rather shallow depth of 1,800 feet. In the Federal zone of the Alamo sector, Panuco, Sol Oil Co.'s No. 1 drilled into salt water at 2,175 feet.

In El Barco, northern fields, Kern Mex Oil Fields, Ltd.'s No. 6 has a 90-bbl. producer at 2,350 feet.

In the southern fields, Mexican Eagle Oil Co.'s No. 19 Cerro Veijo, completed at a subsea level of 1,696 feet, is rated good only for 100 bbls., although it may develop into a larger stripper. The well head pressure at this well is enormous, being 1,000 pounds. Up in Amatlan, its No. 10, Lot 148, is finished at a sub-sea level of 1,639 feet, and it is thought it ought to do around 400 bbls., although no actual test to storage has been made at this writing. In its No. 7 San Diego, which has been blowing such a tremendous gas volume, oil is now being produced through small connections to maintain considerable head pressure and hold back water. The well is good for around 300 to 400 bbls.

Field Operations

Field operations in the Cacalilao sector of the northern fields at the end of the week were as follows: La Corona Petroleum Co., in Lot 4: Nos. 145 and 146 tested cemented 8-inch at 1,220 and 1,200 feet respectively, and resuming to drill in; No. 148 cemented 10-inch in shale at 600 feet. International Petroleum Co., in Lot 5: No. 34 cemented 8-inch in the San Felipe at 1,212 feet; No. 104, bailing hole at 1,530 feet in gray lime; No. 115 in gray shale at 620 feet; No. 117 cemented 8-inch in the San Felipe at

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WORTHAM A FIELD OF UNUSUAL FEATURES

(Continued from Page 23)

but all the experiences a man has had in other notable fields in Texas and Oklahoma. The changes are kaleidoscopic in their swiftness and fascinating in their interest. And that all this mad activity will be replaced by a sabbatical calm in a few weeks is hard to conceive.

Perfect Weather an Aid

The best brand of Texas winter weather has helped the rapid development of field operations. The only drawback to it is that the long dry spell has created a water shortage making necessary the laying of water lines to somewhat distant rivers. Rotary drilling requires a world of water and a continuation of the arid condition will retard the development of the field even though the Humble Oil & Refining Co., The Texas Co. and the Boyd Oil Co. have provided a measure of relief with their water pipe lines.

What Will the Peak Be?

The big question down here is what will Wortham's peak be. Will it be as high as Powell's? Will it surpass Mexia's? Few believe that the record of 356,000 bbls. made by the Powell Field will be equaled at Wortham. Few doubt that the peak of Mexia of 200,000 bbls. will be equaled, if not exceeded, if the pipe lines can care for the production. As The Oil and Gas Journal has pointed out in a previous article on the Wortham Field, the gathering capacity of the six pipe lines that will serve the Wortham Field is about 160,000 bbls. a day, unless plans are changed. On top of this will be the field storage consisting of 55,000-bbl. tanks, of which the Boyd Oil Co. has ordered 50; the Sun Oil Co. 5, and the E. L. Smith Oil Co. 3. The Prairie Oil & Gas Co. has ordered nineteen 55,000-bbl. tanks and five 80,000-bbl. tanks to be erected on its Mexia tank farm and it has empty storage at Powell and partly filled storage at Mexia. The Sinclair Crude Oil Purchasing Co. has some storage room, but not much, and has not ordered any new tanks for this field. It would not take long to fill all the available storage room in the East Central Texas field in the event of a production too great to be shipped through the pipe lines in this territory to the main trunk lines. It may be found necessary to hold down production in order to prevent the waste of oil and the danger of disastrous fires.

Question of Ultimate Recovery

That the ultimate recovery in Powell will reach 60,000,000 bbls. is held by some expert geologists but there are those who think this is too high an estimate.

Wortham is expected to show production for 4½ or 5 miles along a streak of pay averaging a half mile in width. This would mean approximately 2½ square miles, at the most, or about 1,600 acres. A 60,000,000-bbl. production would mean that Wortham must produce 37,500 bbls. to the acre. If the streak is productive for a half a mile in width and for the length estimated it will mean that perhaps 640 producing wells will be drilled on it and these would have to average 93,700 bbls. to the well.

Pipe Line Accommodations

The Prairie Pipe Line Co. has two pump stations in the field, one on the Boyd Oil Co.'s Boyd lease and the other on the same company's J. P. Lindley lease. It has a 4-inch line to the discovery well which is flowing around 800 bbls. a day and a 4 and a 6-inch line to the Boyd Oil Co.'s No. 1 Simmons, which is making around 7,500 bbls. a day. The lines connect with the company's Currie-Mexia line. A survey has been made for an 8-inch line from the Lindley pump station to the main line from Powell to Mexia. The company's present capacity is 30,000 bbls. a day.

The Texas Co. expects to handle about 20,000 bbls. a day through a 6-inch line which will run from its station on the Manning farm to Mexia. It has a 6-inch water line and has been selling water in exchange for oil.

The Pure Pipe Line Co. of Texas will have its station on the Manning 176-acre farm. It has completed a 6-inch line from the station to its Currie-Mexia line and is laying 6-inch lines through the field to its own properties. While it is running oil from Penn and others' No. 1 McCorkle, which was flowing today at the rate of 8,000 bbls. a day, it is not actively soliciting oil. The company has placed an order for 100 miles of 8-inch line and will loop its main line to the Gulf.

The Magnolia Petroleum Co. has laid a 6-inch line from the Nusbaum lease in the Mexia Field to the Wortham Field and will run only Magnolia production. It can handle 20,000 bbls. It has one good property offsetting the Boyd farm on which the discovery well was drilled and has started 14 wells on it.

The Gulf Pipe Line Co. will use a 4-inch and a 6-inch line from its station on the Roy Simmons land to the Butler tank farm east of Wortham. It has some good looking acreage in the field but will take oil from other properties. It has a 20,000-bbl. capacity now but it has only 500,000 bbls. of storage room and may have to cut down its runs or build additional storage.

The Humble Pipe Line Co.'s station is on the A. J. Berry 122-acre farm. It has two 8-inch lines to the leases of the Humble Oil & Refining Co. It is building an 8-inch discharge line to the Saunders tank farm in Powell Field connecting there with its 12-inch main line to Groesbeck station. The Humble Co. has a 6-inch water line and is selling water to Wortham operators who are customers in the Powell Field. It can handle 100,000 bbls. if its full program is carried out. The Humble Oil & Refining Co. has about 360 acres of promising leases and while it will protect old customers it is not soliciting oil now that Robert R. Penn and others' well on the McCorkle farm has developed into a gusher, giving the Humble a big play on its own acreage in that part of the field.

The Sinclair Pipe Line Co. is able to handle 25,000 bbls. of crude through its lines to its main trunk lines before it needs to back up any oil to storage. It is actively soliciting oil and will be connected with some of the most prolific leases in the field for all or a part of their production. Its Powell to Mexia line is only 1½ miles from the field, paralleling it.

A Bit of Field History

When the Humphreys Oil Co. sold out to the Pure Oil Co. all its geological maps and a lot of other valuable data were turned over as a part of the deal. The Boyd Oil Co.'s geological department got busy northeast of Powell and F. Julius Fohs, its chief geologist, for the time forgot all about the Wortham area while trying to locate the fault in the Bazet area and the territory northeast of it. Meanwhile the Pure Oil Co. decided it did not want to play the territory now known as the Wortham Field and it was left open to any venturesome soul who might think he had located the fault and the desirable territory on the up-thrown side of it. The Oil Operators' Trust had tried it and failed, drilling a dry hole 3,216 feet deep on a location which is now believed to have been not more than 50 feet too far west.

The Humble Oil & Refining Co. drilled a quarter of a mile too far east and missed production at 3,102 feet and abandoned the hole. Fohs and his staff made a study of the Wortham area and with the knowledge they had gained in their studies farther up country they found what they were after in the Wortham district and proceeded to gather up what acreage was lying around loose. When all was ready to shoot the Magnolia Petroleum Co. offered the Boyd Co. 35 acres out of the Boyd farm if it would locate its first test on that lease, which was agreed to. The test was drilled and it opened the field, a 2,500-bbl. producer, but it was down on the structure and the rich stuff was expected in the Simmons test which later came in an 8,000-bbl. well.

Started a Mad Rush

The success of the Boyd Oil Co. started the mad rush of developments that have not yet reached their limit. A string of derricks about 4 miles in length and in some places 3,000 feet in width is the result thus far. With two wells in, all eyes were turned to the test of Robert R. Penn, and his partners, including the Boyd Oil Co. and the Atlantic Oil Producing Co. This test was located just east of the town of Wortham. It was in that part of the field in which the Humble Oil & Refining Co.'s geologists thought the richest production lay. When this test had been drilled to a total depth of 2,997 feet with only a fair sized showing of oil in the streaks of Woodbine sand already penetrated it looked as if a third of the field had been definitely cut off and that the Humble had made a sad mistake in its geology. However, Penn and his partners were not altogether discouraged, and they carefully and slowly proceeded downward. Another layer of sand was found at 2,998 feet and this looked good at the start and better as it was penetrated. It was a brown sand, soft and porous and clearly oil bearing. Drilling was stopped at 3,014 feet.

The Penn test was the most interesting well in the field, and it is doubtful if any other test will receive the attention or attract the crowd that remained around it for several days. This morning the work of swabbing the well in was commenced. Hundreds of people watched the operation. Among these were Mrs. McCorkle and her daughter, a young Dallas school teacher. The ladies were tremendously interested, as they had been given to understand several days before that the well was dry and then had been given a new hope that it might make a paying producer. Bob Penn, a fine figure of a young man, one of the most popular operators in the East Texas territory, who had tried to become a successful producer on several occasions and failed, but who was having better success as a royalty buyer, stood on the derrick floor with E. H. Blum of Dallas, general manager of the Atlantic Oil Producing Co., trying, as he said, to make up his mind whether he was to be one of the beneficiaries or one of the chief mourners. The swab was repeatedly run until the water in the hole had been nearly exhausted and still no sign of oil manifested itself. It looked very dubious. It was decided to run the swab again, but before it could be done a jet of muddy water issued from the end of the discharge pipe. The water poured out in ever increasing volume, followed by a tremendous rush and roar of gas. Penn was satisfield. He ordered the flow diverted to the big lead line to the flow tank, and the crowd scattered to spread the news. An hour later Penn calmly announced to a friend that the well had made 265 bbls. the first 35 minutes through a 1½-inch orifice, and that it looked to him to be good for 10,000 bbls. a day, and he never batted an eye when he said it. Meanwhile what about Mrs. McCorkle and Miss McCorkle? The mother looked calmly on taking the great event as coolly as Bob Penn had done, but Miss McCorkle could not mask her enthusiasm. She was as tickled as if she had received an unexpected visit from a sorority sister.

The Penn Well, as a producer, changed the complexion of things around it. It assured operators east and north a successful play. It proved up two, perhaps three, locations west of it, which will take in the east edge of the town limits of Wortham. Humble acreage looked good again as did that of some other operators who already had derricks up awaiting results on the Penn test.

The third producer in the field, preceding the well of Penn and others was that of the Kirby Petroleum Co. on the Bounds farm a little north and west of the Boyd Oil Co.'s No. 1 Simmons. This well started off at 10,000 bbls. a day from sand at 2,945-84 feet and was making 7,500 bbls. today, partly pinched in. Offsetting it on the Beall farm is the test of E. L. Smith due for completion no later than Monday.

Work in the Field

In reviewing the work being done in the Wortham Field it will be well to remark that wells can be drilled so speedily that by the time this story is published many of those mentioned as drilling will be on top of the sand. It is possible to drill from the surface to the top of the Woodbine within seven days. The Boyd Oil Co., when its organization gets to functioning with all smoothness, expects to consume less than 18 days in completing a well from the time work on the derrick is started. That company today has four operations started on the Boyd farm and the Magnolia Petroleum Co. has 13 started on the Boyd farm, of which 3 are drilling wells. The Boyd Oil Co. has derricks up for 7 wells on the Ferguson farm, and 3 of these are drilling wells. The Godley Oil Co.'s No.

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News from Fields of Canada

By Victor Lauriston

CHATHAM, Ont., Dec. 13.—In the Okotoks Field, southwest of Calgary, the MacLeod Oil Co., drilling on legal subdivision 16, Section 1-20-3w5, is reported to have struck a third show of oil at about 2,400 feet depth. The test is shut down, pending a definite test of the production. The MacLeod Oil Co., headed by W. E. McLeod of Calgary, has been drilling for more than a year on this site, which is about three-quarters of a mile south of the Royalite Oil Co.'s No. 4 gasser, drilled in a few weeks ago. The MacLeod test encounteded its first showing about six weeks ago at 2,135 feet, and a second flow a month ago at 2,230 feet. In the first 12 hours the oil rose about 200 feet in the hole. It is a crude testing .7527 specific gravity, and similar to other light oil showings encountered in the Okotoks Field.

In east-central Alberta, British Petroleum's No. 3, Section 29-456w4, is still endeavoring to develop production in the lower sand recently encountered, but is having considerable trouble with water. The test will probably have to be carried deeper with a core drill. British Petroleum's No. 4 has filled all available storage, and 100 bbls. have been delivered to the Canadian National Railways for a fuel test, and a similar amount to the University of Alberta for road surfacing tests. The oil is a heavy asphaltic crude with, apparently, no immediate market for refining purposes; though if additional production can be developed a plant will be built at Wainwright equipped to handle this type of crude. British Petroleum's No. 2 has not yet started pumping. Western Consolidated Oil Co., Section 20-45-6w4 and Wainwright Oil Producers Syndicate, Section 36-44-7w4, are both drilling. All the other outfits in the east-central area are reported shut down.

In southern Alberta Colonel Rossiter and associates of Oklahoma are planning a deep test in the Medicine Hat Field. It is proposed to drill in the municipal field inside the city, some assistance to be furnished the syndicate by the municipality. If the necessary arrangements can be made, actual drilling operations are to be started in the spring.

It is reported that the Royal Canadian Oil & Refining Co., headed by P. Chester Thompson, has secured 13,000 acres from the Gordon Campbell interests in the Kevin-Sunburst Field, and will drill there. The new Royal Canadian enterprise is also reported to have taken over the holdings and unfinished test of the Sanctuary Oil Co. in the Pakowki Lake district, southern Alberta; and may undertake additional drilling on the Canadian side.

Imperial Oil, Ltd., has decided to spend approximately $500,000 in oil storage plant in the Toronto harbor industrial area, according to an official announcement made this week. A site is being secured from the Toronto harbor commission on the east side of Cherry Street. The new plant is being built primarily to supply oil to lake vessels.

Oklahoma Field Operations

By C. D. Lockwood

Deep sand production in Tonkawa Field exceeded former high peak with output of 89,424 bbls. Five new wells completed in that area. Wildcat in Pawnee County made 125 bbls. Magnolia well in Davenport Pool doubled production when deepened. Test south of Cromwell area a failure.

With five new wells in the deep at Tonkawa, the production of the Wilcox sand in that field exceeded its previous peak recorded on September 13, by making 89,424 bbls. during the 24 hours ending last Wednesday morning. Other news of interest in the Oklahoma fields included the completion of J. L. Donahoe's wildcat in Pawnee County, the deepening of the Magnolia's well at Davenport for doubled production, the failure of Holm & Jarvis' well, south of the Cromwell area, in Section 7-9-8, in 3,615-foot sand, and the proving of an edge well in the Cromwell Field by the Carter Oil Co.

Of the five new Tonkawa deep wells, four are on the Gypsy Oil Co.'s Shawver lease. No. 17, SE cor. NE NW, Section 2-24-1w, was making 1,000 bbls. from sand at 4,000-20 feet. No. 40, CEL NW, sand 4,021-47 feet, was flowing 1,350 bbls. No. 86, C SE NW NW, was good for 1,900 bbls. a day from sand at 4,108-48 feet; No. 89, CEL NW SE NW, was good for 1,750 the first 24 hours at 4,096-4,123 feet. The Amerada Petroleum Corp.'s No. 38 Woods, C SW NW NE, Section 34-25-1w, found sand at 4,073 feet, and was making 1,925 bbls. from 4,075-4,105 feet.

The Pennok Oil Co. was deepening its No. 1-D Endicott, SW cor. NW, Section 34-25-1w, which had been producing from only 25 feet in the sand, and had stopped flowing. On the same lease, No. 7-D, NE cor. SW SE, was cleaned out after removing some mud and cavings, and was reported by the Pennok company to be flowing steadily.

The Roxana Petroleum Corp.'s No. 1 McAlester, C NW NE NW, Section 12-8-8, in Hughes County, was making 33 bbls. of water along with 429 bbls. of oil.

J. L. Donahoe's wildcat, No. 1 Zoldoski, C NW NW SE, Section 22-23-4, Pawnee County, was making 125 bbls. from sand at 3,714-17 feet. The Skinner sand, at 3,180-3,220 feet was found to be water bearing.

The Magnolia Petroleum Co.'s No. 1 Smith, SW cor. SE, Section 34-15-5, Lincoln County, which was purchased about three months ago from Flynn & Morgan, the discovery well in the Davenport district increased to 467 bbls. from sand at 3,460-67 feet. First pay, yielding 208 bbls., was reached at 3,424-46 feet.

Holm & Jarvis' No. 1 Cobb, NE cor. SE NE, Section 7-9-8, in Seminole County, was plugging back to the 3,400-foot sand after having a hole full of water at 3,615-19 feet.

A quarter-mile extension on the northeast side of the Cromwell Field was affected by the Carter Oil Co.'s No. 3 Little, C SW SE NE, Section 10-10-8, which was drilling at 3,540 feet and sand topped at 3,433 feet and had 1,500 feet of oil in the hole. It didn't have enough gas, however, to make it flow and is apparently an edge well.

Production at Tonkawa

The daily average production of the Tonkawa Field for the week ending December 10 was as follows by companies.

Company—	Wells	Bbls.
Amerada Pet. Corp.	38	11,072
Blackwell O. & G. Co.	33	7,562
Carter Oil Co.	5	122
Champlin Ref. Co.	2	9
Comar Oil Co.	342	35,698
Cosden O. & G. Co. and Marland Ref. Co.	18	14,220
Gypsy Oil Co.	100	231
Healdton O. & G. Co.	28	1,395
Wentz Oil Corp.	47	17,037
McMan Oil Co.	1	2
Pennok Oil Co.	32	6,830
Phillips Pet. Co.	2	61
Prairie O. & G. Co.	12	501
Sinclair O. & G. Co.	1	15
T. B. Slick and Comar Oil Co.	36	9,961
Southwestern Pet. Co.	15	608
The Texas Co.	5	39
White Eagle Ref. Co.	7	149
Total	702	105,532
Total last week	702	106,739
Decrease	0	1,207

Deep Sand Production

The daily average production of the Tonkawa deep sand during the week ended December 10, was as follows, given by companies:

Company—	Wells	Bbls.
Amerada Pet. Corp., Goltry	5	10,095
Pennok Oil Co., Endicott	7	5,761
Comar Oil Co., Beverlin	2	3,776
Comar Oil Co., Pettit	3	2,641
Comar Oil Co., L. Endicott	4	4,759
Comar Oil Co., E. Endicott	8	14,616
Comar Oil Co., Gaume	1	746
Gypsy Oil Co., Shawver	7	11,541
T. B. Slick, Endicott	7	8,318
Blackwell O. & G. Co., McDaniel	4	6,701
Wentz Oil Corp., McKee	5	15,834
Total	53	84,785
Total last week	49	85,020
Difference	4	235

Burbank Production

Daily average production of the Burbank Field for the week ending December 10 was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	222	11,981
Cosden Oil & Gas Co.	105	3,347
Comar Oil Co.	7	109
Devonian Oil Co.	16	258
Gardner Petroleum Co.	20	486
Gypsy Oil Co.	196	5,272
Kewanee Oil & Gas Co.	25	523
Laurel Oil & Gas Co.	16	211
Lorraine Petroleum Co.	15	156
Midland Oil Co.	37	1,588
Mid-Kansas Oil & Gas Co.	39	1,644
Peters & Oliphant	2	187
Phillips Pet. Co.	110	13,461
Phillips Petroleum Co. and Delmar Oil Co.	16	1,761
Phillips Pet. Co. and Skelly Oil Co.	174	5,335
Prairie O. & G. Co.	106	3,382
Prod. & Ref. Corp.	29	428
Roxana Pet. Corp.	55	670
Simons-Moore et al	29	277
Sinclair	145	2,896
Skelly Oil Co.	22	1,193
Tidal-Osage Oil Co.	43	732
The Texas Co.	6	448
Twin State Oil Co.	24	1,215
Total	1,459	57,560
Total last week	1,455	57,736
Difference	4	176
Kay County Extension		
George S. Bole	3	338
Carter Oil Co.	11	1,361
Comar Oil Co.	19	1,028
Cosden Oil & Gas Co.	16	1,161
Gypsy Oil Co.	19	559
Laurel Oil Co.	5	340
Mid-Kansas O. & G. Co.	10	1,026
Phillips Pet. Co.	31	3,985
Prairie O. & G. Co.	4	297
Pure Oil Co.	5	325
Roxana Pet. Corp.	8	302
Dye-Tomlinson et al	8	614
Skelly Oil Co. and Phillips Pet. Co.	20	565
Sinclair Oil & Gas Co.	5	318
The Texas Co.	16	237
Twin State Oil Co.	15	844
Total	195	13,294
Total last week	195	13,345
Difference	0	51

Daily average of pipe line runs from the Burbank Pool for the week ending December 10 were as follows: Gulf Pipe Line Co., 5,785 bbls.; Cosden Pipe Line Co., 7,240 bbls.; Kay County Pipe Line Co., 6,045 bbls.; Osage Pipe Line Co., 2,167 bbls.; Oklahoma Pipe Line Co., 17,476 bbls.; Prairie Pipe Line Co., 4,753 bbls.; Sinclair Pipe Line Co., 3,214 bbls.; Moore Refining Co., 1,455 bbls.; Standish Pipe Line Co., 12,527 bbls.; Empire Refining Co., 3,012 bbls.; Mid-Kansas Oil & Gas Co., 2,694 bbls.; Twin State Oil Oil Co., 1,934 bbls.; Ozark Pipe Line Co., 1,645 bbls. Total, 70,854 bbls.

The Deep Rock Oil Co.'s No. 1 Derry, C NW SE, Section 23-18-3, Payne County, was shut in for 18,000,000 feet of gas from sand at 1,717-41 feet. The Mulbery Oil Co. has a rig on the ground for No. 1 Flint, NE cor. NW SW, Section 5-17-14.

Coal County received another setback when J. W. Berryman and others abandoned their wildcat, No. 1 Starr, NW cor. NW NE, Section 34-2-9, at 2,870 feet. This well made 5,000,000 feet of gas from sand at 790-820 feet and 3,000,000 feet from a deeper sand at 1,655-79 feet.

A Latimer County test is finding good indications, apparently. Paulter and others' No. 1, CEL SE SE NW, 7-5-18, Latimer County, has set the 12½-inch casing at 607 feet, where it had a gas show estimated at 1,000,000 feet. This test found an oil showing at 560 feet.

The Comar Oil Co.'s No. 1 Williams, NE cor. SE NE, Section 7-27-2, Kay County, found oil in sand at 3,672-87 feet, and drilled to 4,024 feet; the well was plugged back to 3,776 feet and pumped 6 bbls. after a 40-quart shot.

The Carter Oil Co.'s No. 1 Massey, NE cor. Section 17-27-1w, was getting 33,000,000 feet of gas from sand at 3,448-62 feet.

The Blackwell Oil & Gas Co. has a rig up for No. 1 Kumler, SE cor. Section 9-27-1w, in the Blackwell Field. The same company's No. 4 Humphreys was drilling at 1,625 feet.

In northern Osage County, the Beacon Oil Co.'s No. 2, NW cor. SW NW SE, Section 27-29-11, found the Peru sand at 960-90 feet, and was good for 60 bbls. after a 160-quart shot. The Indian Territory Illuminating Oil Co.'s No. 1, CSL SE NW, Section 34-29-11, was dry and abandoned at 2,339 feet.

Henderson & Holden's No. 5, NE cor. NW NE SE, Section 10-25-8, just east of Pawhuska, was abandoned at 2,402 feet after getting a light show of oil at 2,373 feet.

The Mid-Kansas Oil & Gas Co.'s No. 3, SW cor. SE SW SW, Section 21-25-8, reached the pay sand at 2,684-89 feet, and was swabbing 15 bbls. The Lewis Oil Co.'s No. 2, CEL NW, Section 29-25-8, got gas in sand at 2,447 feet, and was flowing 50 bbls. from the Burgess horizon at 2,450-60 feet.

The Sand Springs Home's No. 82, center north half SE NW, Section 36-22-8, was making 3,000,000 feet of gas from sand at 1,912-20 feet, which they were trying to shut off.

The Texas Co.'s No. 10, CNL NE, Section 29-25-8, reached the pay horizon at 2,706 feet, and at 2,708 feet was making 25 bbls. of oil an hour with some water. The Lewis Oil Co.'s No. 2, CEL NW, Section 29-25-8, got a light show of gas at 2,447 feet, and was making 45 bbls. of oil from 2,450-63 feet.

C. B. Peters deepened his No. 1, SW cor, NW SW SE, Section 4-23-9, and was getting 10 bbls. from the Bartlesville at 2,136-84 feet after a 120-quart shot.

Stine and others' No. 3, SE cor. SE SW, Section 9-21-12, topped the Bartlesville at 1,320 feet, and got oil at 1,330-50 feet, and was pumping 20 bbls. The Sand Springs Home's No. 2, SW cor. NE SE, Section 29-20-11, was making 2,000,000 feet of gas from a sand at 1,919-40 feet. The Oklahoma Natural Gas Co.'s No. 656, NE cor. SE NW, Section 29-20-12, was making 3,500,000 feet of gas from the Burgess at 1,652-69 feet.

The Midland Oil Co.'s No. 1, SW cor. NE, Section 12-25-5, a wildcat, found the Bartlesville dry, and was reported to have made one flow and to have a hole full of oil from the Burgess at 2,923 feet.

In Osage County

The Owen-Osage Oil Co. has a machine rigged up for its No. 308, SE cor. SW SW, Section 10-27-11. Messner & Clough's No. 7 was down to 1,640, but held up with casing trouble at 1,640 feet.

Barnes & Clark have a rig up for No. 1, NW cor. SE, Section 13-25-6.

The Atlantic Oil Producing Co. was deepening No. 3, SW cor. Section 27-25-8, Pawhuska Pool, at 2,675 feet.

The Wolverine Oil Co. and others' No. 1, SE cor. NW, Section 14-25-9, was being cleaned out at 1,575 feet, preparatory to deepening.

B. P. McDonald's No. 2, center north half NE, Section 27-22-8, was drilling at 250 feet, and producing 1,000,000 feet of gas from 115-52 feet.

McKeon & Malloy's No. 1-A, NE cor. NE SE, Section 20-23-8, is rigging up tools. The Twin States Oil Co.'s No. 6 NW cor. NE NW NE, Section 13-23-8, a twin well, was drilling at 320 feet. D. F. Millard's No. 1, NW cor. NW SW, Section 12-22-11, was spudding at 200 feet. Breene, Markham and others were spudding their No. 3, SW cor. Section 14-21-10, and had a rig up for No. 4, C S half SW, in the same section. The Sand Springs Home's No. 7, SE cor. SW SE SE, Section 21-20-11, was drilling at 250 feet.

Burbank Operations

The Carter Oil Co.'s No. 16, CEL SE NE NW, Section 11-27-5, reached sand at 2,975 feet, gas at 2,985 feet, and oil at 2,994,3,030 feet. It was shot with 20 quarts at 3,010-30 feet, and was flowing 1,120 bbls. The Phillips Petroleum Co.'s No. 5 Stink, CWL NW SW NE, Section 18-27-6, topped sand at 2,955 feet and was making 150 bbls. after an 80-quart shot between 1,955 and 1,983 feet.

The Carter Oil Co.'s No. 12, CEL SE SW SW, Section 16-26-6, found sand at 2,980 feet, and oil at 2,923-80 feet. After a 105-quart shot at 2,923-72 feet, it was good for 191 bbls. the first 17 hours.

The Phillips Petroleum Co.'s No. 9, SE cor. SW NW, Section 18-27-6, had 2,000 feet of oil in the hole from sand at 2,972-93 feet, and will shoot. Same concern's No. 15, C NW NE NE, Section 14-27-5, was shot with 130 quarts at 3,001-53 feet, and was making 75 bbls.; No. 11, SW cor. C SW NE SE, Section 11-27-5, shot 100 quarts at 3,006-50 feet, and was good for 300 bbls.

The Carter Oil Co.'s No. 15, C NE NE NW, Section 11-27-5, topped sand at 2,977 feet, gas at 2,994 feet, and was producing 192 bbls. after a 120-quart shot at 2,994-3,044 feet.

In Cromwell Pool

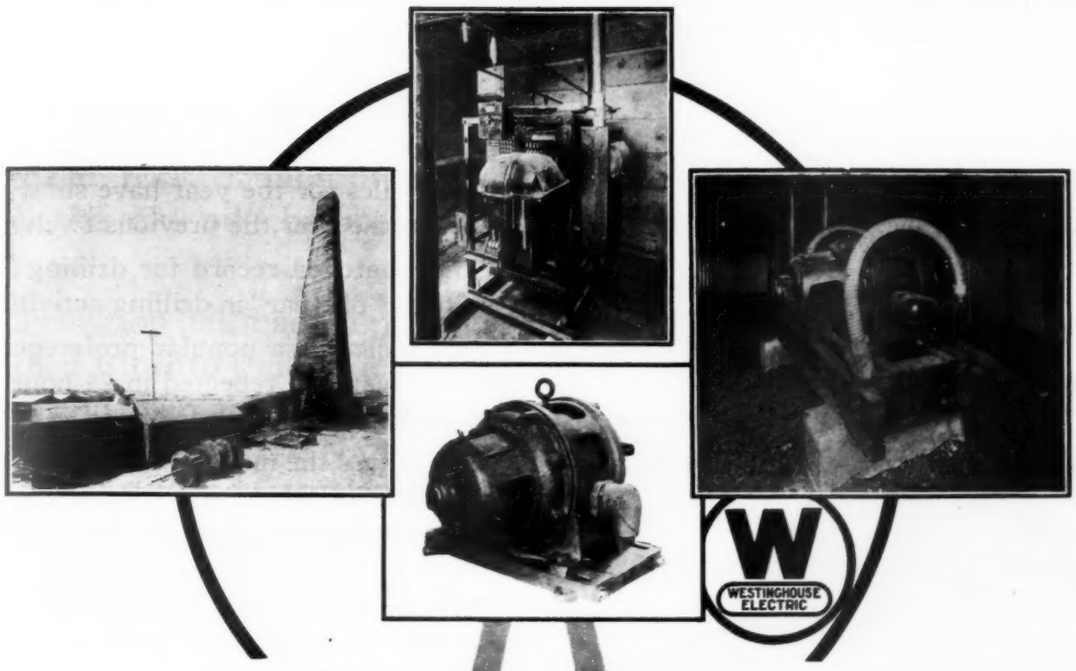
On the east side of the Cromwell Pool, the Roxana Petroleum Corp.'s No. 1 Tiger, C NE SE NE, Section 15-10-8, drilled through the sand at 3,575-85 feet, and at 3,588 feet got water. The well was plugged back 3 feet and was making 20 bbls. naturally.

The Superior Oil Corp.'s No. 4 Baker, C SW NE NW, Section 16-10-8, was flowing 400 bbls. naturally from sand at 3,419-69 feet. No. 5 Baker, C NW SE NW, in the same section, was making 300 bbls. naturally from sand at 3,445-90 feet.

The Roxana Petroleum Corp.'s No. 1 Yarhola, CSW SE SW, Section 3-10-8, reached the sand at 3,326 feet, and got the pay horizon at 3,445 feet; drilling at 3,447 feet, the well was flowing 60,000,000 feet of gas and spraying oil.

The Empire Gas & Fuel Co. and others' No. 4 Dunn, CSL SW NW SE, Section 4-10-8. No. 5 Dunn, CSL SE NW SE, same section, was flowing 2,400 bbls. from sand at 3,391-3,460 feet; No. 6 Dunn, C SE SE SE, was producing 6,000,000 feet of gas, and drilling at 3,360 feet in sand topped at 3,340 feet.

The Cosden Oil & Gas Co.'s No. 1



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Slush lubrication has made it possible to put a Reed Bit into the hardest rock formations and keep going till the cutters have yelled "QUIT." No useless trips up and down the hole to refill oil chamber and break up connections.

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ECONOMY is a pronounced advantage of using Reed bits and reamers due (1) to reduction of drilling time, (2) saving needless trips in the hole (3) leaving no junk in the hole (4) lower cost of bithead and cutters.

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Toney, CSL SE NE SW, Section 4-10-8, was getting 1,150 bbls from sand at 3,420-98 feet. No. 7 Toney, C NE NW SW, Section 4-10-8, was flowing 557 bbls. from sand at 3,406-40 feet.

The Empire Gas & Fuel Co.'s No. 1 Dunn, C SE SW SE, Section 4, was producing 1,200 bbls. naturally from sand at 3,353-3,426 feet. No. 2 Dunn, C SW SW SE, Section 4, was flowing 700 bbls. from sand at 3,400-74 feet.

The Southwestern Petroleum Co.'s No. 1 Jackson, C SW SE NW, Section 4, was deepened to 3,435 feet in sand topped at 3,395 feet, first oil at 3,406 feet and was flowing 110 bbls. an hour, with 3,000,000 feet of gas; No. 2 Jackson, CSE SE NW, in the same section, was also producing 3,000,000 feet of gas and flowing 110 bbls. from sand at 3,405-45 feet, topped at 3,392 feet. The same company's No. 1 Wisner, C SW SW NE, Section 4, found sand at 3,422-70 feet, and was flowing 2,600 bbls. natural.

The Waite Phillips Co. completed four wells on the Dunn lease. They are No. 1 C W half NW SE, Section 4-10-8, sand 3,436-81 feet, 4,800 bbls. naturally; No. 2, C E half NW SE, sand 3,408-90 feet, 2,500 bbls.; No. 3, C E half NE SE, sand 3,353-3,430 feet, 1,000 bbls.; No. 4, C W half NE SE, sand at 3,375 feet, first oil at 3,395 feet, total depth 3,415 feet, and producing 70 bbls. an hour.

The Tidal-Osage Oil Co.'s No. 1 Baker, C NW SE NE, Section 8-10-8, was producing 485 bbls. naturally from sand at 3,409-54 feet.

The Southwestern Petroleum Co.'s No. 1 Jackson, C SW SE NW, Section 4-10-8, found the cap rock at 3,395 feet, sand at 3,406-19 feet, and was making 20 bbls. an hour. After deepening to 3,435 feet, it flowed 110 bbls. an hour. The same company's No. 2 Jackson, C SE SE NW, same section, was doing 118 bbls. an hour from sand at 3,405-45 feet.

Papoose Pool

In the Okfuskee County extension of the Papoose Pool, the Carter Oil Co. deepened No. 1 Johnson, C NW SW SE, Section 33-10-9, and at 3,105 feet it was making 219 bbls. The Kingwood Oil Co.'s No. 3 Sand, C NE SE SW, Section 35-10-9, was producing 110 bbls. an hour from sand at 3,310-3,326 feet.

The Cosden Oil & Gas Co.'s No. 8 Alexander, C NW SW NW, Section 3-9-9, on the Hughes County side, reached the sand at 3,289 feet, and at 3,329 feet was producing 300 bbls., 7 per cent of which was water and b.s. T. B. Slick's No. 1 Grayson, C SW SE NE, Section 3, was doing 60 bbls. an hour from sand at 3,300-3,322 feet. The Papoose Oil Co. abandoned No. 6 Alexander, SW cor. NE SE, after deepening it to 3,450 feet.

The Berry Petroleum Co.'s No. 1 Carolina, C SW SW NE, Section 31-10-9, a wildcat test between the Papoose and Cromwell Pools, was abandoned at 3,615 feet.

T. B. Slick's No. 1-A Grayson, C SW SE NE, Section 3-9-9, topped sand at 3,300 feet, and was making 60 bbls. an hour from sand at 3,306-22 feet.

A deep test by the Lyons Petroleum Co. in the old Lyons & Quinn Pool in Section 13-11-11, Okfuskee County, was abandoned at 3,550 feet, the deepest hole in the pool. The last 140 feet drilled was a solid sand layer, which was saturated throughout with water. The hole is located in the NE cor. SE NW, Section 13-11-11. The owners believe the last sand drilled is the Wilcox.

The Industrial Oil & Gas Co.'s wildcat test in Sequoyah County, located on the J. Faulkner farm, in the SW cor. SE SW, Section 8-10-26, topped a sand at 3,100 feet with a fair show, but at 10 feet in the sand salt water filled the hole, and the prospect has been abandoned.

Drilling Operations

Reports from the Papoose Pool include the following drilling reports and new rigs: Carter Oil Co.'s No. 4 Johnson, C SE SW SE, Section 33-10-9, drilling at 175 feet; Kingwood Oil Co.'s No. 7 Sand, C NE SW SW, Section 35-10-9, rigging up; No. 8 Sand, C NW SE SW, Section 35, rigging up; Prairie Oil & Gas Co.'s No. 2 Sawyer, C SE NW SE, Section 35, drilling at 600 feet; No. 3 Sawyer, C NE NE SE, rigging up; No. 4 Sawyer, C SW NE SE, rig on ground; No. 5 Sawyer, C SE NE SE, building rig; T. B. Slick's No. 5 Sand, C NE SW SE, Section 35, drilling at 200 feet; No. 7 Sand, C NE SE SE, rigging up; No. 8 Sand, C NW SE SE, rig up; Amerada Petroleum Corp.'s No. 1 Harjo, C SW SW SW, Section 36, rigging up.

In the Hughes County part of the field, the newer operations include: Independent Oil & Gas Co.'s No. 1 Bruner, C NW NW NW,, Section 1-9-9, spudding; T. B. Slick's No. 5 Bruner, C SE NW NW, Section 2-9-9, rig on ground; T. B. Slick's No. 7 Bruner, C NE SW NW, Section 2-9-9, building rig; No. 8 Bruner, C NW SW NW, rig on ground; Independent Oil & Gas Co.'s No. 2 Alexander, C NE NE NE, Section 2-9-9, spudding ; No. 4 Alexander, C SE NW NE, drilling at 300 feet; No. 5 Alexander, C NW SW NE, drilling at 550 feet; T. B. Slick's No. 4 Bruner, C NE SE NW, Section 2-9-9, drilling at 250 feet.

The Transcontinental Oil Co. is spudding in No. 1 Bunner, C NW NE NW, Section 25-10-8, 2 miles southeast of the Cromwell Pool.

C. J. Wrightsman's No. 1 Viola Kidd, SE cor. SW NW, Section 26-11-7, had a hole full of water from sand at 3,515 feet, and has shut down for orders.

The Magnolia Petroleum Co.'s No. 1 Manley, C NW SE NW, Section 25-7-8, was being rigged up. The Indian Territory Illuminating Oil Co. has a rig up for No. 1 Charles, SW cor. NW SW, Section 19-9-9, south of the Gilcrease Pool. Furman and others have a rig up for No. 1 Harjo, C SW NW SW, Section 26-9-9, about 5 miles south of the Papoose Field.

In Garvin County the Magnolia Petroleum Co.'s No. 4 Jones, NW cor. NW SE, Section 14-1-3w, was drilling at 140 feet.

Lowe and others' No. 1 Anderson, SW cor. SW NW, Section 13-18-15, was shut down at 1,326 feet. The Frates Oil Co.'s No. 3 McHenry, SW cor. NW SW NE, Section 1-17-14, was drilling at 350 feet. Green and others' No. 1 Drew, SE cor. NW NW, Section 1-17-14, was drilling at 1,110 feet.

The Tulsa County Poor Farm is spudding in No. 1 Vannest, NE cor. NE NW, Section 34-19-13.

In the Wewoka Field of Seminole County, the Magnolia Petroleum Co.'s No. 4 Jones, NW cor. SE NW, Section 32-8-8, Seminole County, found sand at 3,231-38 feet, and was producing 36 bbls. naturally.

The Sinclair Oil & Gas Co. has the rigs on the ground for two new wells in the Wewoka Field; No. 1 Pierce, C SE SE SE, Section 33-11-8, and No. 2 Pierce, C SW SE SE, in the same section.

The Roxana Petroleum Corp.'s No. 1 Young, C NW NW NW, Section 16-9-8, is being rigged up. The Magnolia Petroleum Co. has rigs up for No. 1 Carolina, Aholoke, C NE NE SE, Section 35-8-7.

T. B. Slick's No. 1 Sanny, SW cor. 18-6-7, got a show of oil and gas at 3,670-3,700 feet.

M. E. Johnson's No. 1 Harris, SW cor. SE, Section 19-14-19, Muskogee County, found gas in sand at 820-31 feet; a 3,000,000-foot flow was shut in.

Lincoln County

A good shallow gasser and a deep failure were the Lincoln County contribution during the week. The Magnolia Petroleum Co.'s No. 1 Sukovaty, NW cor. SW NW, Section 2-14-5, was making 10,000,000 feet of gas from a sand encountered at 993-94 feet. The Mountain States Oil Co.'s No. 1 Lewis, SW cor. Section 5-13-6, had a hole full of water from a sand at 4,497-4,505 feet and was shut down.

J. C. Cook's No. 1 De Lasier, SE cor. SW SW, Section 15-14-6, was pumping 40 bbls. in sand at 3,306-66 feet, and preparing to drill deper.

In southern Creek County the Gotham Petroleum Co.'s No. 1 Harry, SE cor. NW NE, Section 27-15-10, was flowing 420 bbls. of oil and some water from the Wilcox sand at 3,059-60 feet. The Atlantic Oil Producing Co.'s No. 1 McNevins, C NW SW SE, Section 17-14-10, was pumping 70 bbls. from a sand at 3,445-47 feet. The Josey Oil Co.'s No. 1 Bear, SW cor. Section 16-14-10, was dry and abandoned at 3,427 feet. The Prairie Oil & Gas Co.'s No. 1 McIntosh, NW cor. SE, Section 24-14-9, was also a failure at 3,581 feet. This hole is a diagonal southeast offset to the Phillips Petroleum Co.'s wildcat producer which came in last June.

G. L. Blackwell's No. 2 Stinson, C NW SW, Section 32-18-11, is getting ready to start up again at 1,000 feet. The Gray oil Co. is rigging up tools on No. 1-A Stewart, SE cor. Section 32-17-12. The Prairie Oil & Gas Co. is spudding in No. 1 Smith, C SE SE, Section 13-17-8; the Waite Phillips Co.'s No. 4 Grayson, SW cor. NW NW, Section 23-17-8, is also spudding in.

The Olean Petroleum Co. was mudding off two gassers, No. 2 Washington, NW cor. NW SW, Section 32-17-8, 80,000,000 feet at 2,797-2,829 feet, and No. 7 Washington, NW cor. SW SW, in the same section.

The Prairie Oil & Gas Co.'s No. 3 Pittman, SW cor. NW SW NW, Section 5-16-8, was drilling at 3,609 feet in sand topped at 3,547 feet, with 2,500 feet of oil in the hole.

The Eastern Oil Co. has a rig up for No. 8 Roberts, NW cor. SW SE, Section 17-15-8. The Prairie Oil & Gas Co.'s No. 4 Roberts, SW cor. NW SE, Section 17-15-8, is spudding in. The Skelly Oil Co. and Billingslea are spudding in No. 1 Fields, NE cor. SE SW, Section 30-15-9, and the Prairie Oil & Gas Co. spudding in No. 3 Adams, SW cor. NE NE, Section 27-15-10; Phillips Petroleum Co.'s No. 1 Dixon, NW cor. NW SE, Section 12-14-9, rig up; the same company's No. 1 Arpoike, CSL SW NE SE, Section 13-14-9, rigging up; Tom Skelly's No. 3 McIntosh, NW cor. SW NE, Section 4-14-10, spudding in; Atlantic Oil Producing Co.'s No. 2 McNevins, C SW SW SE, Section 17-14-10, rigging up; Donnelly & Hall, No. 1 Thompson, NE cor. Section 19-14-10, rig on ground.

Stephens County

The Lone Star Gas Co.'s No. 4 Scott, SE cor. SW SW, Section 19-1s-5w, Stephens County, was getting 1,000,000 feet of gas and 15 bbls. of oil naturally from broken sand at 1,588-1,730 feet. The same company's No. 5-A Beaver, NE cor. NE SE, Section 24-1s-3w, found sand at 2,058-80 feet, and was drilled to 2,090 feet; a 3,000,000-foot flow of gas was shut in.

The Mid-Kansas Oil & Gas Co.'s No. 3 Bristow, SW cor. NW SW, Section 18-2s-7w, was producing 7 bbls. of oil and 50 bbls. of water from sand at 1,889-93 feet. It was an old well deepened.

Rymer & Bennett's No. 1 Carney, NW cor. SW NW, Section 33-1-7w, was dry and abandoned at 2,650 feet.

The Magnolia Petroleum Co.'s No. 6 Webb, NE cor. NE SE, Section 3-2s-5w, Stephens County, was drilling at 200 feet.

Thompson & Black are making a test of the Simpson sand series on the Lawrence uplift, in the SW cor. Section 2-2-5, 8 miles south of Ada, in Pontotoc County. The well was drilling at 1,600 feet on Friday, and has had several shows of oil.

Two small oil wells, a couple of gassers and the usual failures were recorded in Wagoner County. Dr. A. H. Corder's No. 1 McKellop, SW cor. SE NE, Section 25-18-15, found sand at 1,482-86 feet, and was making 30 bbls. after a 10-quart shot. Allen and others' No. 1 Pike, CSL NW NW, Section 29-18-15, was dry and abandoned at 1,420 feet. The Bankers Drilling Co.'s No. 2 Pike, C SW NW, Section 18-17-15, was making 70 bbls. natural from sand at 1,819-26 feet, total depth being 1,832 feet. Reese and others' No. 1 Caesar, C NE NE SW, Section 35-19-16, was dry at 1,075 feet. Youngman and others' No. 1 Kelly, SE cor. SW SW, Section 2-18-16, was abandoned at 1,300 feet. E. L. Haskell's No. 1 Beck, SW cor.

(Continued on Page 190)

Kansas Oil Field News

By C. D. Lockwood

Considerable interest has been attached to the progress of Landers and others' No. 1 Wewishing, CNL NE NW NW, Greenwood County. The well found a sand at 2,115 feet with gas, and oil at 2,925-29 feet, which soon filled the hole. It started flowing Friday and made 110 bbls. the first 9 hours, and was later doing 12 bbls. an hour.

The State continues to show its usual high ratio of dry holes to successful completions. During the week ending December 6, there was a total of 15 completions recorded, 10 of which were dusters, 3 oil wells, and 2 gassers. The previous week showed 12 dry holes, 5 oil wells and no gassers.

Murphy and others' No. 1 Nuttle, NW cor. SW SE, Section 2-23-9, Greenwood County, was shot with 60 quarts in a sand at 2,331-76 feet, and was making 110 bbls. of oil and 30 bbls. of water. Roth & Faurott's No. 2 Burket, NW cor. NW SE NW, Section 12-25-8, found sand at 2,237-46 feet, and drilled to 2,267 feet; a 20-quart shot brought in a 20-bbl. producer. Miller & Jarett's No. 1 Dimick, NW cor. Section 26-26-9, was dry and abandoned at 2,343 feet.

The Tidal Oil Co. has a rig up for No. 4 South, C SE NE SW, Section 22-22-11. The Phillips Petroleum Co. was rigged up on No. 3 Teeter, C SW SW NW, Section 15-23-9. The Mid-Kansas Oil & Gas Co. has a rig on the ground for No. 15 Martindale, C NW SE SE, Section 31-23-10. The Skelly Oil Co. has a machine up for No. 1 Inthurn, C SE SE NW, Section 4-23-10.

The Comar Oil Co. is rigging up a machine for No. 1 Moran, C SE SE NW, Section 16-24-12. George Moore and others will drill No. 1 Morris, SE cor. NE NW, Section 21-24-13.

In Cowley County, the Ohio Feld Co.'s No. 3 Burge, C NE SE, Section 14-30-8, was completed for 3,000,000 feet of gas in sand at 1,724-37 feet.

Day and others' No. 1 Weir, NE cor. NW SE, Section 31-32-4, southwest of Winfield, found sand at 2,596 feet, and at 2,610 had a hole full of water.

The Marland Refining Co.'s No. 1 Graham, NE cor. NE, Section 9-33-3, in the Graham Pool, swabbed 213 bbls. of oil and 200 bbls. of water. The same company's No. 3 Graham, SE cor. NE, swabbed 170 bbls. No. 2 Graham, SE cor. NE NE, was cleaning and swabbing 200 bbls. The Roxana Petroleum Corp.'s No. 1 Wright, NW cor. Section 10-33-3, was making 5,000,000 feet of gas from sand at 3,198 feet; the top of the Mississippi Lime was found at 2,186 feet.

The Lewis Oil Co.'s No. 1 Gibbs, SW cor. SW SE, Section 30-30-6, north of the Eastman Field, was dry at 2,934 feet. The same company's No. 3 Elliott, NE cor. SW SE, Section 31-30-6, found sand at 2,835 feet, gas at 2,844 feet and was flowing at 100 bbls. naturally from sand at 2,876-86 feet. C. W. Titus' No. 3, C NW SE SE, Section 31-30-6, on the northeast side of the pool, reached sand at 2,810 feet and found 1,500,000 feet of gas at 2,825 feet, and 150 bbls. natural from sand at 2,878-96 feet.

The Marland Refining Co. was spudding No. 5 Graham, SW cor. SE NE, Section 9-33-3, in the Graham Pool, Cowley County.

The Arkansas Fuel Co. has a rig up for No. 1 Mahannah, SE cor. NE SE, Section 1-30-7. The Alcorn Oil Co. was spudding No. 1 Eddie, SW cor. NE NE, Section 21-31-6, The Trees Oil Co. has built a rig for No. 2 Shaffer, SW cor. SE NE, Section 10-31-3.

Howarth and others' No. 1 Walker, SW cor. SE NE, Section 15-35-1, in Sumner County, was shut down. The Phillips Petroleum Co.'s No. 1 Felt, NW cor. Section 8-33-3w, had 600 feet of water from a sandy lime at 4,303 feet.

The Waite Phillips Co. and the Phillips

(Continued on Page 48)

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2365' in 11 days -Graham Field-

MESSRS. Johnson and Kemnitz recently completed for the J. B. Schermerhorn & Kirk Oil Company in the Graham field a 2365' well in eleven days and two hours. This time includes setting a string of 8¼" casing.

Messrs. Johnson and Kemnitz used our No. 7 three-speed DREADNAUGHT Draw Works. It has been estimated that these Draw Works save from forty to fifty minutes in coming out of a 2000' hole.

Line shaft and drum shaft are 5-15/16" in diameter. Sprockets and clutches are steel. All loose sprockets are heavily bronze bushed. Chain oiling boxes. All sprockets tapped for Alemite grease connections. Side rollers to prevent line from cutting into post. Furnished in either floor type or post type brake rigging.

The 2365' well drilled by Messrs. Johnson and Kemnitz lies in Section 31-2s-2w. We believe that it was drilled in better time than any other well in the Graham field.

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North Louisiana-Arkansas

By M. L. Vaughn

Drilling to third sand continues in territory between Smackover and Norphlet. New deep sand territory extends over into Ouachita County, increasing drilling operations there. Interest in Webster Parish divided between Cotton Valley and the Springhill territory, latter still in the experimental stage.

SHREVEPORT, La., Dec. 15. — Production dropped considerably during the past week in the Louisiana Field, the daily average of 51,593 bbls. showing a decrease of 3,882 bbls. a day. Cotton Valley fell off 2,885 bbls., leaving its present production 7,060 bbls. a day, with every other district in the field showing a slight decrease with the exception of Elm Grove, which showed an increased production of 79 bbls. a day.

South Arkansas also evidenced a decline in production during the week, although not so pronounced as in North Louisiana. The daily output fell from 111,600 to 110,322 bbls., a decrease of 1,278 bbls. a day. The combined production of the two fields amounted to 161,915 bbls., distributed as follows:

North Louisiana	
Bellevue	4,115
Caddo light	9,789
Caddo heavy	2,247
Cotton Valley	7,060
De Soto and Red River	4,653
Elm Grove	664
Haynesville	15,955
Homer	7,110
Total	51,593
South Arkansas	
El Dorado	10,685
Nevada County	1,295
Smackover light	29,592
Smackover heavy	66,565
Stephens	2,185
Total	110,322
Total both fields	161,915
Decrease	5,160

Entering Cotton Valley

Prospect of the Crusaders Oil Corp. entering the Cotton Valley district and operating on a large scale is regarded as almost assured. The Crusaders has put up a substantial sum as earnest money and is examining titles and investigating the production, geological history, etc., on 660 acres of leases owned by the Oil Fields Gas Co., included in the Hope estate and located in Sections 13; 20 and 24, Township 20, Range 15. The property has been placed in escrow and the Crusaders has until December 23 to exercise the option. The Oil Fields Gas Co. drilled the discovery well in the Cotton Valley district and has a number of wells now drilling on its property. It is understood the consideration to be paid for the property runs close to $1,000,000.

A party of officials of the Standard Oil Co. of Indiana, stopped off at Shreveport en route to Chicago from attendance at the meeting of the American Petroleum Institute at Fort Worth, and completed a tour of the Dixie Oil Co.'s holdings, a subsidiary company, in the Caddo oil and gas fields. The party included Col. Robert W. Stewart, chairman of the board of directors; E. G. Seubert, vice president and secretary-treasurer; Allen Jackson, vice president; R. H. McElroy, director of traffic, and Edward J. Bullock, director of purchases, all members of the board of directors. While in Shreveport, the party was entertained by F. H. Wickett, president of the Dixie Oil Co.

J. K. Wadley, prominent lumberman in Arkansas and Louisiana, and considerably experienced in oil development, has announced his intention of drilling in Miller County, Arkansas, where he has leases on approximately 10,000 acres north and east of Texarkana. Mr. Wadley has taken over the holdings of the A. G. Kress Co. and will first complete the well on the Floyd Thompson land, 4 miles northeast of Texarkana, now closed down at 917 feet. If he finds any encouragement in the Thompson well he will make a series of tests in the neighboring territory.

R. J. O'Brien and associates have sold to the Alabama Petroleum Co. their lease on 80 acres in Section 19-21-9, on the eastern edge of the Cotton Valley Field, for a consideration of $20,000, of which $8,000 was paid in cash and the remainder to be paid from the first seven-sixteenths of the oil produced and saved on the lease.

Completions

Union County, Arkansas

Completions in the El Dorado and Norphlet districts numbered four, all pumpers, with an aggregate production of 320 bbls.

Baggott and others completed No. 1 Clark in Section 21-16-15, pumping 100 bbl. at 2,069 feet.

Estes and others got a 45-bbl. pumper at 2,263 feet in No. 4 Freeman, Section 1-16-17.

The Higgins Oil & Fuel Co. completed Murphy A-4 in Section 14-16-15, pumping 75 bbls. at 1,990 feet.

Kinnebrew and others completed No. 4 Williams in Section 3-16-15, pumping 100 bbls. in 40 feet of broken sand at 1,991 feet.

Ouachita County

In the Smackover and Louann districts, there were seven completions during the week, all pumpers, with an aggregate initial production of 537 bbls.

H. E. Clark completed No. 1 Smith in Section 26-15-17, pumping 65 bbls. from 24 feet of sand at 2,395 feet.

The Forest Oil Co.'s No. 4 Mullins, in Section 28-15-16, made a 7-bbl. pumper at 2,000 feet.

Galloway and others completed No. 6 Hughes, Section 28-15-16, pumping 80 bbls. in 14 feet of sand at 2,304 feet.

Hunt and others completed Anderson A-3, Section 23-15-17, pumping 80 bbls., 5 per cent salt water, from 46 feet of sand at 2,306 feet.

Hurley and others completed No. 4 Stringfellow, Section 28-15-16, pumping 75 bbls. from 7 feet of sand at 2,302 feet.

The Magnolia Petroleum Co. completed No. 4 Nettie Patton, Section 32-15-16, pumping 50 bbls. in 15 feet of broken sand at 2,259 feet, and No. 3 W. F. Patton, Section 31-15-16, pumping 50 bbls. at 2,282 feet.

The Texas Co.'s No. 1 Reynolds in Section 23-15-17, is pumping 130 bbls., 10 per cent b.s. at 2,295 feet.

Bossier Parish

J. F. Palmer completed No. 4 McAnn, Section 31-16-11 in the north end of the Elm Grove district, making 2,500,000 feet of gas at 1,910 feet.

Caddo Parish

The Richardson Oil Co. tested dry at 2,000 feet in No. 1 Bickham, Section 15-18-15, and the well has been abandoned. The test was in the Cross Lake district, 7 miles northwest of Shreveport, and another test will be made in the same territory.

In the Waskom district, 15 miles west of Shreveport, three gas wells were completed; the State Line Oil & Gas Co.'s No. 1 Mays Brothers, Section 17-17-16, making 15,000,000 feet of gas at 940 feet; the Waterman Drilling & Development Co.'s No. 1 Bryson, Section 18-17-16, making 8,000,000 feet of dry gas at 925 feet, and No. 2 Waterman, Section 18-17-16, making 15,000,000 feet of gas at 1,916 feet.

Morehouse Parish

Ladel and others completed No. 3 White, Section 33-20-5, making 11,000,000 feet of gas at 2,236 feet.

Ouachita Parish

Ladel and others completed No. 31 fee, Section 20-19-5, making 8,000,000 feet of gas at 2,115 feet.

Nevada County, Arkansas

The Prescott Oil Co. abandoned its test, No. 2 Henry, Section 10-12-20, at 1,000 feet.

Drilling Operations

Union County, Arkansas

Drilling to the third sand continues to occupy the attention of operators in the Smackover Field, particularly in the territory lying between Smackover and Norphlet, and a number of old holes have been gone into during the week to be deepened and retested in the 2,300-foot sand.

The Arkrado Oil Co. is rigging up to drill No. 5 Hatfield in Section 7-16-15.

The Arkansas Fuel Oil Co. tested at 2,256 feet in No. 5 LaGrone, Section 1-16-17, got 700 feet of oil in the hole but will drill deeper.

The Arkansas Invincible Oil Co.'s No. 1 Patterson, in Section 12-16-17, is standing with 2,000 feet of oil in the hole at 2,305 feet, and will be drilled deeper.

Beery and others are drilling at 1,670 feet in their wildcat test on the Union Sawmill Co. land in Section 14-19-11, 28 miles southeast of El Dorado.

The British Allied Estate has derrick up for No. 2 Jones, Section 21-16-15, in Norphlet Townsite, having taken the property over from Sam Cook who drilled the first well.

Broderick & Calvert have gone back into their No. 2 Bradford, Section 8-16-15, completed September 11, 1923, a 250-bbl. pumper, and will drill to the deep sand.

The Cherokee Petroleum Co. is testing No. 7 Burton in Section 25-16-16, and has 500 feet of oil in the hole at 2,032 feet and derrick up for No. 8. Crawford & Sebastian, set 4½-inch casing at 1,932 feet in No. 3 Giller, Section 14-16-15.

The Federal Petroleum Co. is drilling at 2,835 feet in its deep test on the Childs lease in Section 8-16-16.

W. H. Gilliland is bailing to test Hodges A-1, Section 6-16-16, and has 700 feet of oil in the hole at 2,266 feet.

The Gulf Refining Co. is bailing casing to test at 1,864 feet in No. 9 M. Alphin, Section 2-16-15 and at 1,875 feet in No. 1 H. Murphy, same section; 6-inch casing has been set at 2,220 feet in No. 25 L. Werner, Section 5-16-16, and at 2,217 feet in No. 25 in Section 6-16-16.

Howell and others set 10-inch casing at 65 feet in No. 1 Williams, Section 3-16-15, and W. W. Jones and others are rigging up to drill No. 1 G. F. Murphy in Section 18-16-15.

E. M. Jones is drilling in lime at 3,054 feet in No. 1 Murphy, Section 28-16-16, one of the deepest tests in this territory.

The Liberty Oil Co. is drilling in rock at 1,420 feet in No. 1 Davis, Section 31-16-14, 4 miles southwest of Norphlet.

The Lion Oil & Refining Co. has derrick up for No. 6 Graves in Section 3-16-15; Magnolia Petroleum Co. is rigging up to drill No. 3 Harris, in Section 16-16-16 and has made a location for No. 1 N. J. Scott, Section 12-16-17.

Matthews and others are rigging up to drill a wildcat test on the Teele land, Section 11-19-12, 18 miles east of the South El Dorado Field.

The Natural Gas & Petroleum Co. tested No. 3 Frazier, Section 1-18-16, getting 1,000 bbls. of salt water with a show of oil at 2,551 feet. The well will be drilled deeper. Location has been made for No. 5 Murphy in Section 8-16-15. Myerscough and others set 6-inch casing at 2,148 feet in No. 3 Smith, Section 29-17-14.

P. F. O'Brien set 12½-inch casing at 170 feet in the second hole for No. 1 fee, Section 13-19-17, 7 miles west of the South El Dorado Field. The first hole was lost at 1,506 feet.

The Ohio Oil Co. has taken over the old well drilled by Waite Phillips during the boom days, No. 1 Pate, in Section 10-16-15, and will try to bring the well back or else deepen to the 2,300-foot sand. Initial production was estimated at 10,000 bbls.

The Penguin Oil Co. set 6⅝-inch casing at 1,975 feet in No. 3 Berry, Section 18-16-15; Phillips Petroleum Co. set 6-inch at 1,992 feet in No. 1 Hearin, Section 13-16-16; Pure Oil Co. has a fishing job at 1,370 feet in No. 1 Hicks, Section 20-16-15, and set 8¼-inch casing at 2,030 feet in No. 1 Lawton, Section 30-16-13.

Rogers and others set 6-inch casing at 1,938 feet in No. 2 LeCroy, Section 17-16-15; Rutledge and others have derrick up for No. 4 Hodges, in Section 1-16-17, and Simms Oil Co. set 4½-inch casing at 2,625 feet in No. 1 Laney heirs, Section 8-16-16.

The Standard Oil Co. set 10-inch casing at 123 feet in No. 9 J. H. Alphin, Section 3-16-15, and 6-inch at 1,905 feet in No. 15 J. H. Alphin, Section 11-16-15; Sutherland and others set 6⅝-inch at 1,845 feet in No. 4 Neely, Section 1-16-17; Summerfield Oil Co. has 200 feet of oil in the hole in No. 6 Smith, Section 29-17-14, and arranging to pump at 2,185 feet, and Sunny Jim Oil Co. is drilling at 1,850 feet in No. 2 Flenniken, Section 9-16-15.

The Texas Co. is bailing No. 1 McAdoo, Section 15-16-16, with 700 feet of fluid in the hole, of which 70 per cent is b.s. and salt water at 2,600 feet.

Wabler and others junked the hole at 2,220 feet in No. 1 Williams, Section 36-17-14, and moved south 30 feet. Weatherbee and others lost the hole at 2,225 feet in No. 3 Rice, Section 6-16-16, and are arranging to skid over, and Nye Wilson set 10-inch casing at 62 feet in No. 4 Hays, Section 1-18-17.

Ouachita County, Arkansas

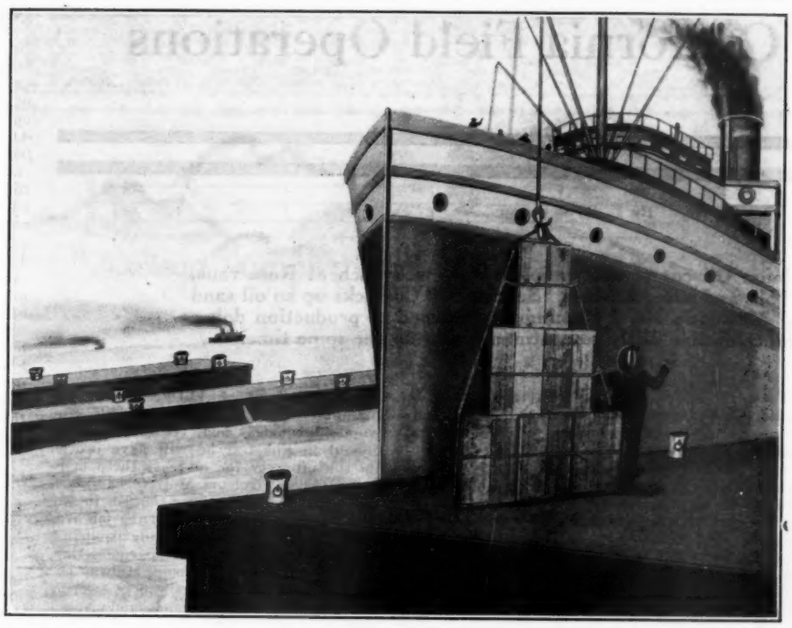
The new deep sand territory in the Smackover Field extends over into Ouachita County and the effect of this development is already noticeable in an increase of drilling operations in this territory. Many new interests are entering the field and there is every indication that by the first of the year the drilling end of the industry will be in a healthier state than for many months.

Boger and others have taken over the lease on which Rowe & Farrell drilled one well on the Minor land in Section 20-15-16, and have derrick up for a second well. Bray-Hawthorne's No. 1 Copenhaven in Section 13-15-17, tested salt water at 2,567 feet, plugged back and retested at 2,530 feet and is now shut down, waiting orders. Their No. 1 Goodwin in Section 12-15-17, is drilling at 600 feet.

The British Allied Estate's No. 1 Lampkin Fee, in Section 6-13-18, a wildcat test 10 miles northwest of Camden, is rigged up, waiting on water, and Burton Trustee is drilling at 2,050 feet in No. 3 Hughes, Section 28-15-16, an old well being drilled deeper.

H. E. Clark has 500 feet of oil in the hole at 2,340 feet in No. 1 Yarbrough

(Continued on Page 200)



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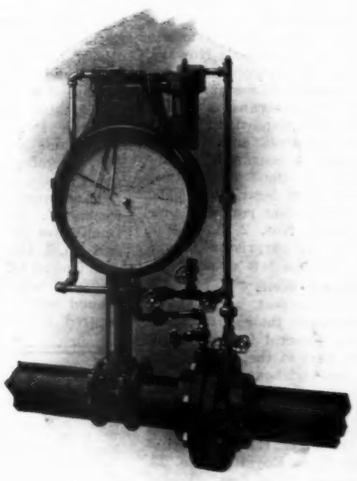

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METRIC METAL WORKS

California Field Operations

By L. P. Stockman

Barnsdall and Union Oil companies complete new well each at Rosecrans, former for 1,970 bbls. and latter 625 bbls. Sentinel Oil Co. picks up an oil sand in No. 1 Athens. Marland's No. 2 Dominguez returned to production doing 1,410 bbls. Torrance decline likely to continue gradually for some time.

LOS ANGELES, Cal., Dec. 13.—The Barnsdall and Union Oil companies added 2,595 bbls. of new production at Rosecrans by completing one new well each, the former accounting for 1,970 bbls. and the latter 625 bbls. Barnsdall finished its second producer on the Rosecrans leases, in the southern part of the district, while the Union added another producer on its Howard Park property in the center. The former's No. 2, an offset to the Associated's No. 2 Higgins, now drilling ahead at 3,877 feet, was good for 1,970 bbls. from 4,386 feet. The oil is of a high gravity testing 41.5 degrees and is comparatively clean, cutting only 1.1 per cent. No. 3 on this lease, an offset to the Union's No. 1 Rosecrans, is temporarily held up with a fishing job which developed several weeks ago at 3,333 feet.

On the O'Dea property, the company is cleaning out No. 1 and drilling ahead in No. 2 at 4,142 feet and in No. 3 at 1,935 feet. On the Howard Park leases, the Union successfully finished No. 3 and was rewarded with a 625-bbl. well from 4,700 feet. The oil, flowing through a ½-inch bean, tests 36.1 degrees and shows a cut of 2½ per cent. No. 6 Howard Park tested wet at 4,755 feet and this offset to E. J. Miley's No. 2 is being cemented. The Union and Barnsdall both have production splits on the two wells finished this week, the Barnsdall having an interest in the Union's Howard Park property and the latter holding an interest in the former's Rosecrans lease. The Union's No. 1 Rosecrans, a recent completion at 370 bbls. sanded up during the early part of the week and it is reported the company is considering deepening it. If this is done the output should be boosted to at least 1,000 bbls. The Union has three other potential producers on this lease, Nos. 2, 3, and 5, and it would not be surprising if one was brought in within a few weeks.

Outpost Wells

A check of the outpost wells shows practically no change in their status. No. 1 Amestoy of the General Petroleum, in the southwestern part of the district, has reached 6,344 feet without picking up anything, while the Union's No. 1 Gordon, also in this immediate area, is equally as dry at 5,350 feet. Continuing eastward from the latter, the next well of importance is the U. S. Royalties' No. 23, being cleaned out at 4,745 feet. Water trouble has been holding up a test for several weeks and it is understood the company will land a string of 4¾-inch in an effort to shutoff around 4,560 feet. A little north and east, No. 1 Athens of the Pacific Petroleum is still dry at 5,591 feet and it begins to look as though the latter marks the outer limits of the field. Northeast of No. 1 Athens of the Pacific, the St. Helens has a 4,560-foot hole in No. 1 Rowell. The holes immediately west and northwest of the St. Helens are somewhat discouraging.

The Marland has suspended operations on No. 4 at 3,890 feet and the Union has followed a similar policy in No. 1 Hersey at 4,431 feet. No. 1 Cowan of the Standard, in the northeastern part of the field, is drilling ahead in a hard sandy brown shale at 5,400 feet with only a small chance of production. The Union's offset, No. 1 Horowitz, has been standing idle for several months at 1,993 feet. J. B. Dabney suspended work on the northeastern outpost after going to 5,528 feet and it is understood he will file an abandonment notice on this hole shortly. E. J. Miley spudded in No. 3 Athens on the same property and his No. 1, which extended the field to the northwest a few weeks ago. Paul Getty, George F. Getty's son, acquired R. W. Perkins' property and immediately went to work. Getty, who will operate under the name of San Joaquin Oil Co., is drilling ahead in No. 1 at 651 feet and is building a rig offsetting the Bankline's No. 1 Kanady, which is being rigged up. George F. Getty started work on his No. 1 Athens and at present shows 450 feet of hole.

Picks Up Oil Sand

The most important development in the field during the week was the picking up of an oil sand in No. 1 Athens of the Sentinel Oil Co. at 5,230 feet. The cores looked so good the company will set a string of 8¼-inch and test out. Should this well result in a successful completion it will extend the field another half mile northwest and prove up several hundred additional town lots. Between the Sentinel's No. 1 Athens and E. J. Miley's No. 1 Athens, there are many leaseholders, including the Federal Drilling, Petroleum Midway, Barnet Rosenburg, Paul Getty, George F. Getty, W. P. Cassidy and E. K. Potter and many others too numerous to mention. The Shell and Pan-American, both drilling northwest of the Sentinel's No. 1 Athens, are making fairly good progress. The former's No. 1 Leonis, offsetting Pan-American's No. 1 Anderson, now at 4,400 feet, is going ahead at 4,347 feet in a sandy shale.

Three new rigs were started during the week, W. H. Fisher's No. 8, No. 1 Dominguez of the Hercules Gasoline Co. and No. 1 McCuen of the Title Oil Corp. The United Oil Co. is grading No. 1 Farwell and will probably have material on ground within a few days. C. C. Julian secured a very satisfactory core in his No. 1-A Athens at 4,918 feet but unfortunately several stands of drill pipe were subsequently lost. If Julian is successful in this test he will have proved up the property for at least three more holes. The Petroleum Midway has given up the attempt to recover the fish in No. 1 Ducommon and has turned the job over to a diamond drill contracting company, which will carry the hole to completion, if successful. The Petroleum Midway has spudded in No. 1 Folsom and is erecting rigs for No. 1 McCormick and No. 1 Baskin.

Dominguez

There was only one new well finished at Dominguez, although two former producers were returned to production after being cleaned out. The Marland, after removing the sand and mud from its No. 2 Dominguez, returned that well to production doing 1,410 bbls. The Marland now has three wells on production and three drillers, one No. 4, now at 4,380 feet, should be tanking oil within a few weeks. Nos. 5 and 6 are going ahead nicely, the former at 2,650 feet and the latter at 832 feet.

No. 6 Reyes of the Shell, an offset to the Union's No. 2 Carson, was a semi-completion after being cleaned out to 4,550 feet. It is believed the company will do some additional work before listing it as a satisfactory producer, as it only made 210 bbls. No. 2 Childs is still wet and, although a little oil was produced, the greater majority of the output was water. On the Reyes lease, the Shell has several good looking holes and indications point to an early completion of No. 17 at 4,410 feet and No. 20 now at 4,211 feet. No. 13 Reyes is standing cemented for the second time at 3,802 feet while the third cement job on No. 16, at 3,915 feet, looks successful. On the Manuel property, No. 1 is being tested for a water shutoff at 4,119 feet, while No. 2 has been cemented for the second time at 3,958 feet. The Shell seems to be having unusually hard luck with cement jobs lately. No. 4 Manuel is going ahead at 3,410 feet, while a string of 8¼-inch is being landed in No. 5 at 3,956 feet.

The Union secured an excellent core in No. 2 Carson at 4,436 feet and set a string of 6¼-inch at 4,276 feet. No. 3 on the same lease is standing cemented at 4,205 feet. The only hole of interest on the Callender property is No. 7 at 4,074 feet, which has several hundred feet to go before picking up the pay. Material is on ground for Nos. 6 and 9 on the Callender lease and Nos. 10 and 11 on the Hellman property. No. 8 Hellman of the Union proved to be an unusually good well when turned loose from 4,150 feet. During the first 24 hours it tanked 1,574 bbls. of clean 31.7 gravity oil. This makes the southeastern part of this property look exceedingly good.

No. 1 Del Amo of the Henderson Petroleum, an important test north of the Shell's Manuel property, is just getting under way at 1,500 feet. This hole has more than an even break. The United has three holes on its Dominguez lease and should record No. 2 as an early completion as it is down to 4,420 feet. No. 3 is standing cemented at 695 feet, while No. 4 is held up with a sidetracking job at 1,900 feet. The Associated is making rather slow progress developing its De Francis lease but should have No. 1-B, now at 3,816 feet, and No. 2 at 3,877 feet, ready for production soon. No. 5 is making hole at 2,976 feet, while No. 6 is drilling ahead at 3,301 feet. The Birch Oil Co.'s No. 1 Humphries, in the extreme western part of the field, is drilling in a brown shale at 5,600 feet and is rated as deep and dry.

Torrance

Torrance has been showing a gradual decline in daily production for several weeks, and this condition will continue for some time, since the new wells are insufficient to offset the decline. There were five wells put on production during the past seven days, with an aggregate initial daily output of 658 bbls., but only one was of any consequence. This was the Standard's No. 18 Joughin, a 394-bbl. pumper of 18.9 gravity oil from 3,840 feet. The company's new well was finished with a 6¼-inch oil string landed on bottom, which carried 285 feet of shop perforated.

The Chanslor-Canfield Midway Oil Co. finished a 110-bbl. pumper in No. 78 Torrance and, although No. 76 on the same lease was ready to pump, some little delay has been occasioned in connecting it up. No. 78 is pumping 25.7 gravity oil from 3,701 feet after being finished with an 8¼-inch oil string carrying 526 feet of 60-mesh screen and 3,170 feet of 3-inch tubing. The company's deep test, No. 1 Francis, is drilling ahead in a sticky brown shale at 6,435 feet.

The Petroleum Securities (Doheny) listed two new wells on Kleinmeyer Lease A, but both rather small. No. 7, drilled to 3,810 feet and finished with a 6¼-inch oil string carrying 270 feet of 60-mesh screen, pumped 60 bbls. of 16.9 gravity oil on a 24-hour test. No. 9 made 28 bbls. of 16.8 gravity oil during a similar period from 3,800 feet. This hole was also finished with a 6¼-inch oil string but required 285 feet of 60-mesh screen. The Petroleum Midway (California Petroleum) secured a 66-bbl. pumper in No. 1 Brown, a completion at 3,455 feet. The output tests 17.2 degrees and shows a cut of 3 per cent.

The Shell's deep test, No. 2 Ketler, shows 5,289 feet of hole, the formation being a hard gray sand. The Lora J Oil Co. is attempting to solve a difficult water problem in its deep test, No. 1 Lomita, and officials are confident deep production will be secured if the water trouble can be overcome. Two tests have already been made and, although some oil was present in each instance, the presence of water prevented a satisfactory test. The General Petroleum, as soon as the oil sand had been packed up in No. 20 Poggi at 3,620 feet, started work on Nos. 2, 3 and 4 on the same lease. The foundations are in for these three new holes and it is probable construction of the rigs will be started within a few days.

Long Beach

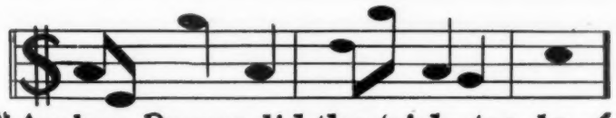
One new well was added to the produc-

(Continued on Page 186)

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

H. C. Folger, December 3, Philadelphia, refined	75,794
W. S. Rheem, December 6, New York, crude	92,344
Nora, December 7, New Orleans, crude	92,130
Agwihavre, December 7, Baltimore, crude	92,101
Coastwise	
Los Angeles, December 1, Martinez, crude	76,142
Lubrico, December 1, Richmond, crude	85,223
Frank H. Buck, December 1, Avon, crude	65,669
U. S. Tanker Kanawha, December 2, San Diego, fuel	62,198
Dilworth, December 2, Portland, fuel	72,142
Tejon, December 4, Seattle, fuel	70,637
D. G. Scofield, December 4, Richmond, crude	77,223
Cathwood, December 4, Martinez, crude	76,971
Warwick, December 5, Seattle, refined	45,746
La Purisima, December 5, San Diego, refined	33,390
Frank G. Drum, December 5, Avon, crude	66,311
Lubrico, December 6, Richmond, crude	86,412
W. S. Miller, December 7, Richmond, crude	75,994
Liebre, December 7, Portland, fuel	73,569
La Placentia, December 7, Martinez, crude	75,116
Meton, December 7, Seattle, fuel	77,032
Exports	
G. Harrison Smith (Br.), December 4, Tocopilla, fuel	126,910
Toco (Br.), December 6, Chile, fuel	76,556
Broad Arrow, December 6, Woosung, refined	97,561
From San Francisco	
Wm. F. Herrin, December 1, Linnton, fuel	45,911
Delaware Sun, December 2, Philadelphia, tops	96,582
W. S. Porter, December 3, Cordova, fuel	53,877
Kewanee, December 3, Seattle, refined	28,219
Tascalusa, December 5, Hongkong, refined	63,812
S. C. T. Dodd, December 6, Jacksonville, fuel	78,905
Swiftscout, December 7, Fall River, tops	78,363
From Port San Luis	
Deroche, December 3, Oleum, crude	74,715
La Placentia, December 3, Oleum, crude	78,094
Los Angeles, December 6, Oleum, crude	73,199
Deroche, December 7, Oleum, crude	76,018



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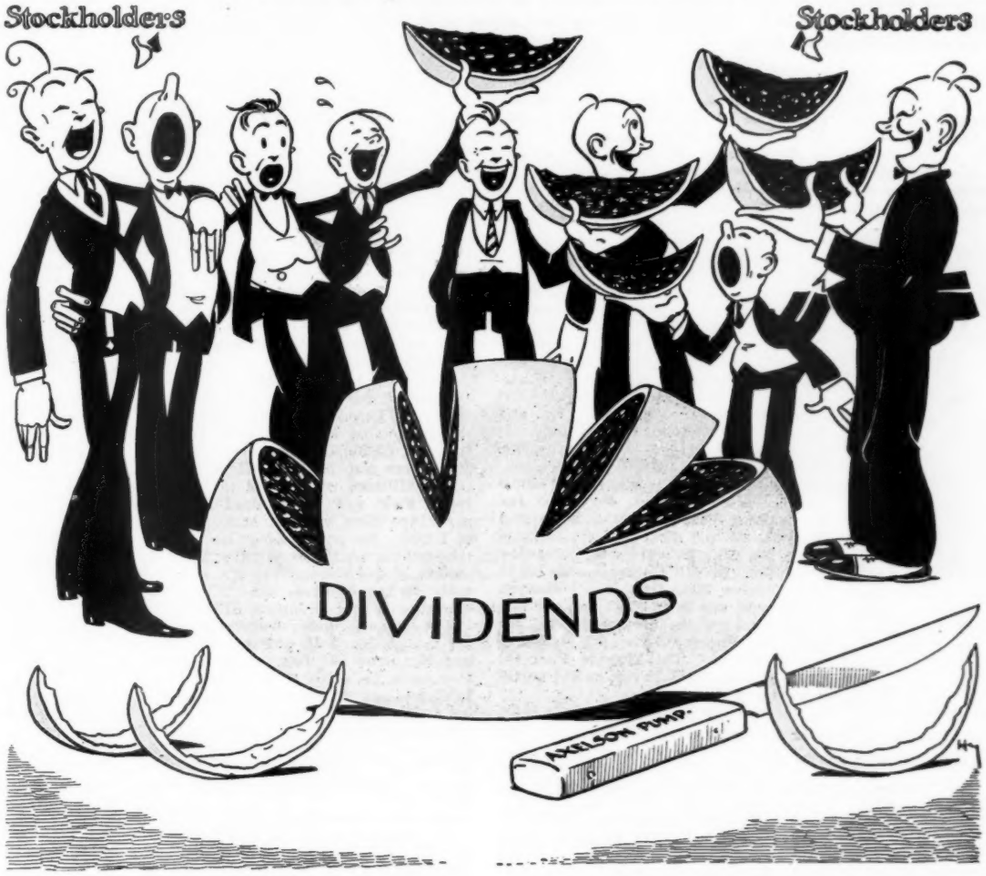

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No. 1 Horowitz, has been standing idle

Deroche, December 7, Oleum, crude 75,618

(Continued on Page 150)

Gulf Coast Oil Operations

By P. L. McGreal

Production of Gulf Coast pools decreases nearly 3,000 bbls. Five of week's completions outside of proven territory. Producer in Orange Pool increases flow from 1,500 to 2,500 bbls. Drilling lagging at Luling with efforts being made to extend limits of field.

HOUSTON, Tex., Dec. 15. — Wells completed in the Gulf Coast Pool during the week numbered 27, with 1,846 bbls. of new production. Six failures were listed for the week, with three salt water holes and two bailing at the end of the week. Five of the completions are outside proven territory.

The estimated daily average gross production for the week in the Coastal area is placed at 77,563 bbls. against 80,224 bbls. last week. The estimate for the Southwest fields is placed at 43,385 bbls. compared with 43,595 bbls. last week. The estimate for each district is as follows:

District—	Gross Bbls.
Batson	1,618
Blue Ridge	700
Big Creek	600
Barber Hill	140
Damon Mound	1,325
Dayton	90
Edgerly (La.)	525
Goose Creek	9,850
Humble	5,110
Hull	15,675
Jennings (La)	965
Markham	185
Orange	14,000
Pierce Junction	700
Spindletop	1,150
Saratoga	1,500
Sour Lake	3,980
Vinton (La.)	6,050
Welsh-Anse La Bute (La.)	90
West Columbia	12,300
*Miscellaneous	1,010
Total	77,563
Southwest Fields—	
Luling	34,300
Laredo	4,385
Somerset	2,600
Calliham	540
Rockdale-Minerva	460
Jim Hogg County	1,100
Total	43,385
Grand total	120,948
Grand total last week	123,819
Decrease	2,871

*Vacuum well, Calcasieu Parish (La.) estimated 800 bbls., balance scattered.

Orange Pool

Fourteen pools were represented in the list of completions during the week. In the Orange Pool, the Gulf Production Co.'s No. 1 Granger, in the southeast end of the pool, which came in last week at 4,500 feet flowing 1,500 bbls., has increased to 2,500 bbls. It is 500 feet south of production along Cow Bayou. Production now extends along that stream, which cuts through the pool from north to south, for a distance of 2 miles. The Mutual Oil Co.'s No. 3 Chesson quit flowing early in the week. The Supreme Oil Co.'s No. 4 Jackson is flowing 325 bbls. at 4,200 feet. The Gulf Production Co.'s No. 8-A Kishi Lang is flowing 600 bbls., 50 per cent sediment and water at 5,100 feet and its No. 10 Hager-Moore will make a pumper at 3,525 feet.

In the Goose Creek Pool, the Gulf Production Co.'s No. 6 Wright is pumping 50 bbls. at 1,600 feet. The same company's No. 4 Hirsch is on air making 100 bbls. at 4,400 feet. The Humble Oil & Refining Co.'s No. 5 Jones in the bay is pumping 45 bbls. at 2,850 feet. The Copeland Oil Co.'s No. 5 Bryan is bailing at 3,200 feet.

Prewitt and others' No. 2 Morris 10 acres on the south side of the Stevenson in the deep sand section of the Humble Pool, is flowing and pumping 200 bbls. at 3,085 feet. It shows 5 per cent water, 24 gravity and 76 degrees temperature. No. 1 Morris is pumping 880 bbls. No. 2 is located 300 feet south from No. 1. Prewitt and associates will work over four old holes on the lease. On the north side of the Stevenson, Barclay & Meadows are drilling No. 1 Koehler and in the old pool, W. O. Cobb is drilling No. 2 Rosenthal.

In the Hull Pool, the Gulf Production Co.'s No. 13 Scarborough is pumping 125 bbls. after being deepened to 3,550 feet. The Empire Gas & Fuel Co.'s No. 16 Barngrover bailed dry at 3,500 feet and is being drilled deeper.

The Gulf Co. is drilling No. 15 Scarborough with an electrically operated rig, located 265 feet north of production. The same company's No. 11 Baldwin, 250 feet south from production, is drilling at 985 feet. No. 16 Hannah is rigging on the west side, out on the flat from the dome. The Texas Co. and Vacuum Oil Co.'s joint No. 4 Hannah on the southwest side is drilling at 1,650 feet, located some 2,600 feet off the salt. Ou the east side, the Republic Production Co. is drilling Nos. 48, 90, 93 and 96 Dolbear. The Gulf Co. is drilling Nos. 43, 44 and 45 Phoenix and deepening No. 38. The Humble Oil & Refining Co.'s No. 18 Guedry on the south side, is below 2,765 feet. No. 1 Hannah on the west side is at 3,533 feet and No. 1 Merchant on the northwest, at 1,225 feet. The Mecom Oil Co.'s No. 4 Mecom is still fishing. The Higgins Fuel Oil Co. is rigging No. 5 Taylor on the northwest side of the dome.

In Other Pools

In the Batson Pool, the Ada Bell Oil Co.'s No. 81 Wise is pumping six bbls. at 1,150 feet. The Acorn Oil Co. abandoned No. 49 Paraffin at 455 feet.

In the South Lake Pool, the Gulf Production Co.'s No. 54 Hardin is a 25-bbl. well at 1,975 feet. The Texas Co.'s No. 237 fee is a salt water hole at 2,575 feet. Both are workovers.

Hamm & Co. have a light pumper in No. 1 Bryan at Damon Mound at 1,503 feet. In the West Columbia Pool, The Texas Co.'s No. 66 Hogg, a workover, is flowing 1,000 bbls. of fluid, 300 bbls. of oil at 3,165 feet.

The Humble Oil & Refining Co. is deepening No. 5 Coon there at 3,155 feet and drilling No. 12 Pipkin at 295 feet.

Outside of the pools proper, the Vacuum Oil Co. abandoned No. 1 Gray, near Lockport, La., at 5,330 feet. Its producer there is flowing 3,000 bbls. of fluid, 70 per cent sediment and water. The company has three rigs running.

In Jefferson County, the Paggi Brothers Oil Co. abandoned No. 1 Lazerino at 2,100 feet, south of China and has made a location for No. 2. At High Island in Galveston County, Yount-Lee Oil Co.'s No. 4 Guidry bailed dry at 315 feet and is being deepened. The Pathfinder Oil Co.'s No. 5 Davis in Fort Bend County quit at 800 feet, after getting the gyp rock at 629 feet.

Conklin and associates, of Galveston, report a well pumping 10 bbls. on the Hess land, southwest of Brenham, Washington County, at 355 feet.

The Stratton Ridge Oil Co.'s No. 14 Dannebaum at Stratton Ridge, Brazoria County, is showing some gas at 1,265 feet.

Southwest Fields

In the Luling Field, the runs of the Magnolia Petroleum Co. for November were 330,729.63 bbls., compared with 380,081.38 bbls. during October. E. B. Davis of the United North and South Oil Co. has secured control of the Mutual Pipe Line Co., which has gathering lines, storage facilities and a loading rack and has been shipping out crude since the field opened.

Drilling in the defined area is lagging, but efforts are being made to extend the producing limits on the Gaudalupe County side to the southwest and northeast and to the northwest on the Caldwell County side of the river. On the Schubert lease on the Gaudalupe County side, the Magnolia Petroleum Co.'s Nos. 13 and 14 are drilling.

Laredo Fields

Runs of the Magnolia Petroleum Co. from the Laredo districts during November totaled 31,939.48 bbls. as compared to 35,266.92 bbls. during October. In the new district in Jim Hogg County, O. W. Killiam, who opened the old Mirando Field and who started the Texpata Pipe Line and the Misko refinery at Laredo, has purchased 40 per cent of the stock of the Big Bend Oil & Gas Co., owners of the Henne, Winch and Fariss wells on the Martinez land. The consideration is said to involve $110,000.

The Henne, Winch and Fariss interests are drilling No. 5 Martinez at 1,345 feet and No. 6 at 765 feet. The Magnolia Petroleum Co.'s No. 1 Thompson is at 1,975 feet and Bailey and others set casing in No. 1. The Witherspoon Oil Co. set casing in No. 1 Holbeing, spudded No. 2 and has a derrick up for No. 3. The Shasta Oil Co. set casing in No. 1 and the Pleateau Oil Co.'s No. 1, Block 15, is drilling. The Texo Oil Co. has a rig in for No. 1, Survey 256.

In Zapata County, R. K. Bateman's No. 1, Survey 617, is below 1,100 feet. The Panuco Production Co.'s No. 1 Vela is at 655 feet. O. W. Killiam's No. 1, Survey 307, set casing at 1,665 feet. The Mirando Oil Co.'s No. 16 in the old Mirando Pool, was drilled to 2,020 feet and shut down.

Fort Bend County

In the Big Creek Pool, 7 miles south of Richmond, the Gulf Production-Snowden & McSweeney interests are deepening No. 9 Davis at 3,585 feet and drilling No. 16 Davis at 2,890 feet, with a derrick standing for No. 17. On the Wheat pasture, No. 8 is below 2,900 feet. The Texas Co.'s No. 1 fee is drilling below 2,900 feet, showing some gas.

On Erie Townsite in the same county, the Gulf Coast Development Co.'s No. 3 Vogel is around 4,500 feet. The Nelian Oil and Refining Co.'s No. 1, west of Rosenburg, is at 755 feet. The Rycade Petroleum Corp.'s No. 2 Nash is at 1,750 feet in a sand showing salt water. No. 3 Nash is at 765 feet. The Gulf Production Co.'s No. 3 Moore is rigging.

In the Markham Pool in Matagorda County, the Rycade Petroleum Corp.'s No. 1 Gray is sidetracking from 3,420 feet, with the bottom of the old hole at 4,225 feet. No. 2 Gray is rigging. The Marland Oil & Refining Co.'s No. 1 Dwyer is around 3,900 feet.

In Wharton County on Boling Dome, the Gulf Production Co. is rigging No. 2 Cloud and No. 3 Felder. At High Island in Galveston County, the Sun Oil Co.'s No. 2 Broussard is at 2,000 feet. The Green Oil Co. is starting No. 1 McCarthy. S. J. Hindman is drilling No. 1 Collier on the east side of the Barber Hill Dome. The Texas Co.'s No. 1 fee in Liberty County is at 1,345 feet.

Orange Pool

On State land in Cow Bayou, the Rycade Petroleum Corp.'s No. 1-E is at 4,470 feet with No. 5-E at 3,765 feet. No. 9-E is at 4,955 feet and No. 14-E fishing for drill pipe at 5,325 feet. The Gulf Production Co.'s No. 2 Consolidated is at 4,375 feet. No. 8 Pevito is at 4,200 feet and No. 4-A Chesson at 1,345 feet. No. 2 Chesson is deepening at 4,655 feet. No. 3 Chesson is deepening at 4,425 feet. A derrick is standing for No. 17 Hager.

The Mutual Oil Co.'s No. 6 Chesson is sidetracking from 4,050 feet. No. 7 is pulling casing at 4,235 feet. No. 9 is at 3,740 feet. The Sun Oil Co.'s No. 2 Bellisle is setting casing at 4,295 feet. The Orange Petroleum Co.'s No. 8 Chesson is deepening at 5,075 feet. No. 9 Winifree is working over. The Humble Oil & Refining Co.'s No. 9-B Chesson is drilling at 2,035 feet. No. 21-B Chesson is at 2,435 feet. No. 14-B is pulling liner. No. 10 Winifree is working over and No. 11 Winifree is drilling at 3,200 feet. The Brownie Babbittee Oil Co.'s No. 4 McLean is as 3,060 feet and No. 2 Brown is sidetracking. The Kishi Development Co.'s No. 5 McGure is at 2,405 feet. Andrews & Cameron's No. 2 Cow Bayou is working over. The Edgerly Petroleum Co.'s No. 3 Carbello is at 3,900 feet.

In the Goose Creek Pool, the Gulf Coast Co.'s No. 41 Galliard is at 2,655 feet. The Southern Exploration Co.'s No. 2 Wright is deepening at 1,500 feet. The Inca Production Co.'s No. 2 Duke is at 2,100 feet. The Hisgen Petroleum Co.'s No. 2 Busch is at 3,924 feet.

The Gulf Co.'s No. 5 Houston-Smith and No. 17 State land are rigging up. No. 8 Producers is deepening at 1,900 feet and No. 15 Smith fishing at 1,500 feet. No. 8 Chapman-Bryan is at 4,225 feet. No. 21-A Wright is drilling at 5,155 feet. No. 8-A Tabb is deepening at 2,235 feet. The Humble Oil & Refining Co.'s No. 6 Tabb is drilling at 2,100 feet. No. 47 Smith is working over. No. 59 Smith is drilling at 4,035 feet and No. 60 at 4,070 feet.

South Louisiana

In the Vinton Pool, the Gulf Refining Co.'s No. 34 Star is at 1,900 feet and No. 2 Vincent is at 1,907 feet. No. 45 G. N. G. is deepning at 2,325 feet. The Sun Oil Co.'s No. 3 Johnson is deepening at 2,325 feet. The Seiss Oil Co.'s No. 5 Green is drilling at 1,900 feet. The Just Oil & Refining Co.'s No. 1 Weeks is fishing at 1,800 feet. The Vinton Petroleum Co.'s No. 14 Vincent is pulling liner. The same company is rigging Nos. 42 and 43 Gray to drill them deeper. The Edgerly Petroleum Co.'s No. 2 Lizzo is below 3,550 feet. No. 1 Vincent is deepening. Wilson & Brouch's No. 5 Parks is deepening from 2,425 feet, where it bailed salt water.

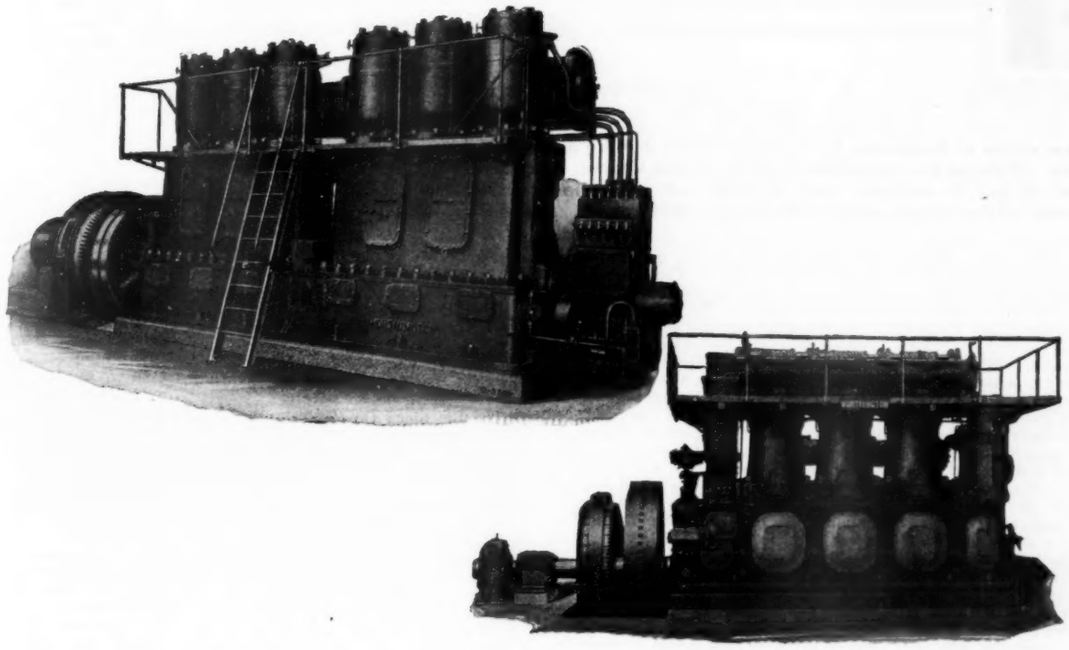
In the Edgerly Pool, the Roxana Petroleum Co. is rigging No. 1 Hunter. In the Jennings Pool, the Gulf Co. is rigging No. 35 Jennings-Clement; Manley & Clark, No. 9 Martin and the Ogdon Oil Co., No. 1 H. F. H.

The Roxana Corp. has taken over 25,000 acres in fee and leases from the Johnson Bayou Prospecting Co. at Johnson Bayou in Cameron Parish and will drill a series of shallow formation tests. The Yount-Lee Oil Co. is drilling at Hackberry Island in the same parish.

The Empire Gas & Fuel Co. has leased 9,000 acres in Ascension Parish on the east side of the Mississippi River, between New Orleans and Baton Rouge. Very few tests have been made on that side of the river.

APPOINTED SALES MANAGER

F. E. Edwards, who has been a salesman for the Illinois Oil Co., Rock Island, Ill., has been appointed sales manager. The company has a refinery at Cushing and a plant for the manufacture of steel barrels and paints at Rock Island. It distributes refined products, including greases and lubricating oils and paints and also sells in tank car lots.



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Rocky Mountain Area

By F. B. Taylor

New strike of California Co. in Byron Field drilling again but showing dwindles. Midwest Co. completes 11 wells in Salt Creek. Continental Co. finds 50 feet of pay in southern part of field, but production comparatively small. Union setting small casing in Wellington, Colo., well. Activity in wildcatting.

CASPER, Wyo., Dec. 15.—Heavy storms in the past few days have interfered with field work throughout Wyoming and Montana. The new strike by the California Co. at the Byron Field is drilling again and the showing has dwindled to almost nothing. However, it seems to point the way to a possible new oil field in the Torchlight sand at that field and the oil men think it will eventually lead to the discovery of important pools there. There are still four or five sands below the drill and any of these may produce oil.

The oil is thought to have become mudded off by the work of drilling the hole deeper and that a shot would start it flowing again. The well started flowing when the bit entered the sand and made one flow that went over the crown pulley; then the crew tried mudding it off and from the first attempt the well ceased to flow and after a time the hole was bailed dry without trouble. The company will make a test of all the sands to the Lakota and if nothing commercial is found below, will come back and test the Torchlight sand.

Wildcats Drilling

A few wildcats are drilling in spite of the weather. The Sheldon Dome well north of Riverton, in Fremont County, is about 1,000 feet and making hole. The Union Oil Co. is spudding on the Lake Dome east of Thermopolis in Hot Springs County and the Wallace Creek well of the Mutual Oil Co. is drilling south of Waltman in Natrona County. The wildcat just outside the city limits of Casper, drilling for the Meabon Syndicate, is shut down for a few days at 1,800 feet.

The Kinney Coastal Oil Co. drilled in its deep test on Section 19-38-78 in Salt Creek to the Dakota sand during the past week and found the Dakota carrying water. This test was expected to find oil in the Dakota or Lakota under it and the water came as a surprise. It is now thought this well is located in a faulted spot in the field that holds the water in that particular place. The deep test of the Midwest of Section 35-40-79, is now drilling to the Lakota sand.

La Barge Land Drawing

The Evanston Land Office of the Government at Evanston, Wyo., was the scene of a hot contest for an application for a tract in the La Barge Field, in Lincoln County the past week. A tract comprising 960 acres lying in Sections 21, 28 and 33 of Township 27, Range 113, was ordered reopened to applicants for permits as the former applicants had not lived up to these terms of the Government's permit. The usual advertisement brought 247 applicants to the land office and the land office decided the matter by drawing. The first name drawn was Miss Marion A. Bird of Salt Lake City, Utah, and the second was George Rommey of Salt Lake. In case Miss Bird fails to live up to the terms of the permit, the application of Mr. Rommey will hold.

This tract lies in what is thought to be good prospecting territory in the heart of the La Barge area and the operations there by the Midwest which is drilling a deep test in the field has tended to draw considerable interest and cause land values to soar. It is thought the Utah Oil & Refining Co., a subsidiary of the Standard of Indiana, is to operate the tract for Miss Bird. The Utah Oil & Refining Co. already has extensive holdings in the field.

At the latest meeting of the Wyoming Petroleum Club, Geologist W. H. Geis of the Consolidated Royalty and other firms, read a paper on the present trend of the industry and the influence of the new fields in Texas and California on the Wyoming crude market. Tracy N. Shaw of the Midwest Refining Co. read a paper on the need of first aid and A. G. Hardendorf detailed the work of the Intermountain Water & Power Co. in building the new pipe line to the Salt Creek Field from the Tisdale water well, which is to furnish a water supply for the whole field.

Producers in the Sunburst Field of Montana have been having trouble with water in the oil and the necessary heating of the crude has caused a heavy loss in the gasoline content. The Tretolite method has been tried out in the field recently with excellent results and the new method does away with the high heats used to throw down the oil heretofore.

Salt Creek Completions

The Midwest Refining Co. completed 11 wells in Salt Creek the past week. The Salt Creek Consolidated found a small producer on Section 31-40-78 in the second Wall Creek at 2,351 feet, estimated good for 15 bbls. On the same section, this firm got a well good for 212 bbls. in the same sand at 2,128 feet and a third small producer that will be shot at 1,991 feet.

The Wyoming Associated Oil Co. on Section 26-40-79 found a producer at 1,398 feet that will make 79 bbls. and another at 1,500 feet, same section, good for 50 bbls. On Section 30-40-79, this firm has a second Wall Creek producer good for 15 bbls. at 2,184 feet.

The Midwest Oil Co., on Section 35-40-79 has a first Wall Creek sand well at 1,135 feet good for 50 bbls. and the Wyoming Oil Fields Co., on Section 23-40-79, has a completion making 819 bbls. at 1,574 feet.

The Mountain & Gulf Oil Co. found a 15-bbl. producer in the second Wall Creek sand at 2,185 feet on Section 6-39-78, and another that made 32 bbls. on Section 12-40-79 from 2,428 feet, same sand. Also a producer that started off at 11 bbls. at 2,279 feet in the second Wall Creek sand on Section 13-40-79.

In the southern part of the field, the Continental Oil Co. (Mutual) found 50 feet of pay in some wells recently drilled but the production is comparatively small. It is considered from this indication that had the Continental drilled these wells some months or years ago this territory would have produced at much higher figures and that some of the production has been drained by other wells. Faulting in the south end of Salt Creek is more pronounced than in the rest of the field and it is considered that this accounts for some production seemingly being separated into pools of different productive capacities.

Test to Lakota

The deep test of the Mountain & Gulf being drilled to the Lakota sand is still trying to mud off the oil and gas found in the Dakota sand. The work has progressed to where the crew hope to have the well in the Lakota sand by the latter part of next week.

In the Wellington district, in Colorado, the Colorado Union Oil Co. is setting the small casing after having had trouble with the former shutoffs. When this is done the well will start drilling again for the Dakota sand.

The Big Sioux Oil Co., drilling on the Irvine structure, south of Douglas, in Converse County, has a dry hole and is pulling casing. This wildcat went to 2,741 feet and did not find the second Wall Creek sand; the first Wall Creek came in as expected but carried water with a little gas.

The Mack Oil Co., drilling on the Sheldon Dome, 50 miles north of Riverton, in Fremont County, found some shale oil about 800 feet but not of commercial size. This well is the third test of this structure and the first test is still making some light oil and gas from the Frontier sands.

The Wyland Syndicate, drilling a wildcat near Arminto, in western Natrona County, is at 2,100 feet. This well found some gas in the first Wall Creek and is now on its way to the second sand.

In the Powder River Field, the Midwest wildcat, drilling for the Jupiter Oil Co., is below 1,000 feet and in shale. This well is an offset to an old well drilled by the Jupiter Oil Co. in that field back in 1918 which was a good gas producer when first drilled in. These wells are thought to have been shut off by cavy hole for at present the gas pressure does not amount to anything.

Several geological parties are active in the country north of the Salt Creek Field in Johnson County where there is much faulting to be noticed on the surface. This condition has led to the leasing of much land and a well is in prospect in the spring.

Runs for the Past Week

Salt Creek	57,900
Teapot	2,180
Big Muddy	3,140
Grass Creek	3,310
Elk Basin	890
Greybull	20
Rock Creek	3,100
Notches	40
Rex Lake	Shut in
Lance Creek	970
Poison Spider	380
Osage	330
Hamilton Dome	770
Mule Creek	Shut in
Lander	250
Byron	80
Pilot Butte	80
Lost Soldier	5,410
Ferris	50
Craig	1,100
Fort Collins	725
Florence	245
Cat Creek	3,210
Sunburst	3,495
Miscellaneous	600
Total	88,275

KANSAS FIELDS

(Continued from Page 40)

Petroleum Co. were rigging up No. 1 Pruett, C NE NE SE, Section 26-33-1. The Tidal Oil Co. was building a rig on No. 1 Milligan, SE cor. Section 5-35-1. The Phillips Petroleum Co. was moving in tools for No. 1 Webb, SW cor. SW SE, Section 12-30-4w.

Montgomery County

The following wells were reported from Montgomery County, all of which were dry and abandoned: Osage Oil Co.'s No. 1 Barnes, NE cor. NW NE, Section 30-31-14, at 1,714 feet; Arkansas Fuel Co.'s No. 1 Busby, SW cor. SE SW, Section 19-31-17, at 1,478 feet; Keithley and others' No. 1Maffer, NE cor. NW, Section 21-31-17, at 1,327 feet; Red Bank Oil Co.'s No. 3 Coleman, CSL SW SE, Section 28-32-14, at 1,676 feet; Sturnburg and others' No. 1 Burke, SW cor. SW NW SW, Section 9-32-16, at 1,501 feet; Wilkins and others' No. 1 Zotz, CWL SE SW, Section 12-33-16, at 1,450 feet; Dunn and others' No. 1 Clark, NW cor. NE, Section 32-33-16, at 1,465 feet; Appleman and others' No. 1 Lett, NE cor. SW, Section 22-33-17, at 1,265 feet. Canary Oil & Gas Co.'s No. 2 Dynell, NE cor. NE NW NE, Section 6-35-16 at 1,676 feet, the second break, 1,750-52, water-bearing; No. 2 Dynell, SW cor. NE NE, Section 6-35-15, top of Mississippi lime 1,385 feet, hole full of water at 1,761 feet, abandoned; Kingston Oil Co.'s No. 1 Taylor, NW cor. SE NE, Section 6-35-15, topped the Mississippi lime at 1,384 feet, hole full of water at 1,765 feet.

Black & Landon and the Prairie Oil & Gas Co.'s No. 1 Edwards, NW cor. NE SW SW, Section 21-32-15, Montgomery County, was getting 80 bbls. from sand at 1,539-41 feet. Eisenbach and others' No. 1 Whipple, NW cor. Section 25-24-13, was making 9,750,000 feet of gas from what they think is the Wilcox at 1,800-06 feet.

In Butler County, Braden Brothers & Ellis' No. 1 Knox, NW cor. SE SW, Section 17-27-7, was dry and abandoned at 2,725 feet. The Cassoday Oil Co.'s No. 5 Magnuson, C NW NW, Section 14-30-4, was swabbing 40 bbls. from 2,797-2,811 feet after it was given a 20-quart shot. The Watchorn Oil & Gas Co.'s No. 38 Townsend, SE cor. SW NE, Section 5-22-4, was producing 50 bbls. natural from a sand at 2,485-89 feet.

Sandifer & Gardner have a rig up for No. 1 Wolf, C NW NW SE, Section 26-24-3. Shawver and others have a rig up for No. 5 Meyers, NW cor. SE SW, Section 27-28-5.

John Markham's No. 5 Speir, CEL NE NW NE, Section 8-22-4, Marion County, is a twin well, drilling at 425 feet.

Anderson and others' No. 2 Smith, C SE SE, Section 21-29-9, Elk County was making 8,500,000 feet of gas from sand at 1,625-40 feet. The Pure Oil Co.'s No. 1 Chappin, NW cor. NE SE, Section 14-31-10, was getting a 50-bbl. production from a sand found at 1,350-59 feet. Richey Moore and others' No. 1 Hyde, NE cor. SW SW, Section 17-30-9, was dry at 2,600 feet.

The Ohio Fuel Co. spudded in No. 1 Smith, C NW SW, Section 22-29-9. The Southwestern Gas Co. has a machine up for No. 1 Hughes, C NE NE, Section 33-21-12.

Three dusters were recorded in Wilson County: Foster Oil Co.'s No. 1 Van Vickle, NE cor. Section 24-28-16, which found the top of lime at 1,133 feet, and water in sand at 1,471 feet; Pulaski Oil Co.'s No. 1 Malone, C NE SW, Section 14-30-13, struck cap rock in Mississippi at 1,872 feet and water at 1,898 feet.

The Empire Gas & Fuel Co.'s No. 2 Baker, CSL NE NW, Section 23-23-15, Woodson County, drilled deeper. It was formerly abandoned at 1,715 feet.

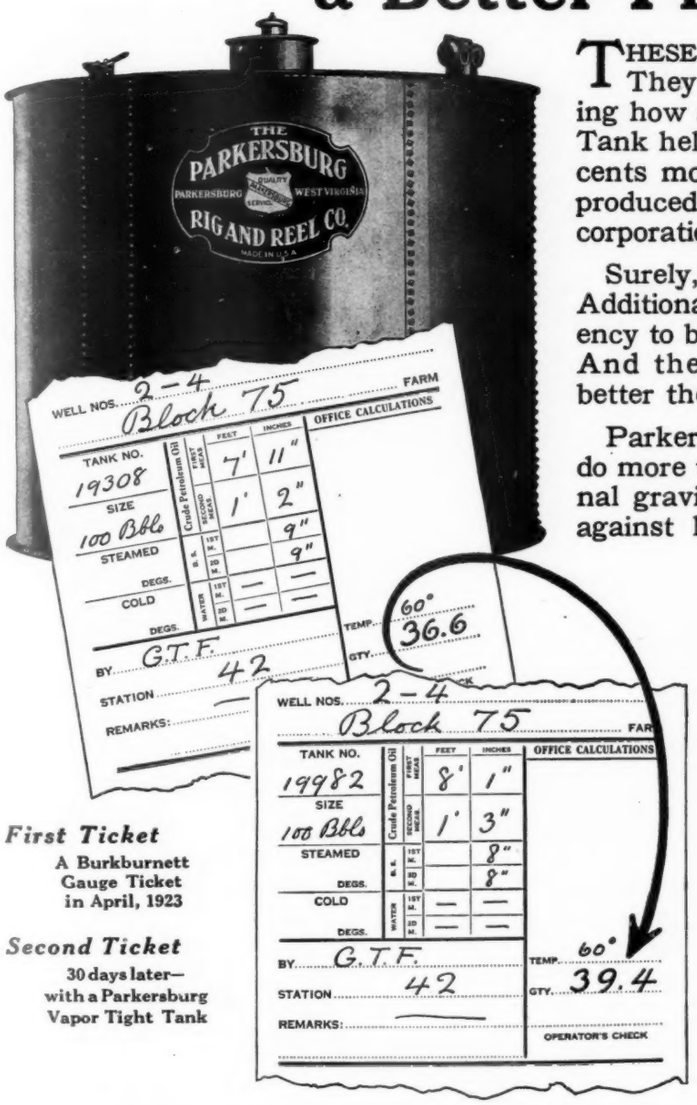
OIL CITY GASOLINE MARKET FAIRLY GOOD

OIL CITY, Pa., Dec. 13.—The situation as regards gasoline in northwestern Pennsylvania was fairly good during the week. The demand held up fairly well and prices were firm. Some sellers of oil products now contend the tank car prices and the tank wagon prices are too close.

Kerosene is a little stronger than it has been, probably as a result of the strength being shown by fuel oil.

Cylinder stocks are not so good as they might be although there is a real attempt being made to hold up the prices. Neutrals are in good demand with good prices. Wax continues strong and in good demand yet.

A Better Tank *and* a Better Price for Oil



First Ticket
A Burkburnett Gauge Ticket in April, 1923

Second Ticket
30 days later—with a Parkersburg Vapor Tight Tank

THESE gauge tickets tell the story. They are a definite record showing how a Parkersburg Vapor Tight Tank held up gravity and brought 40 cents more per barrel for the crude produced by this nationally known corporation. (name on request)

Surely, here is a worthwhile saving. Additional profits because of the tendency to buy crude on a *gravity* basis. And the higher the gravity—the better the *price*.

Parkersburg Vapor Tight Tanks do more than hold crude to its original gravity—they hold every barrel against losses through evaporation.

PARKERSBURG Service includes complete installations of Tanks and Equipment for retaining gas with crude at pressures consistent with customers' requirements, or for separation of gas for manufacture of gasoline or use as fuel.

Parkersburg Vapor Tight Equipment can be applied to any steel tank of any capacity although best results are obtained when this equipment is used with Parkersburg Bolted Steel Tanks.

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Kentucky—Tennessee

By Vern T. Whitney

Western Kentucky has 90 drilling and 11 rigs and Eastern Kentucky 88 drilling and 4 rigs, 16 in east wildcats. Mississippi has 26 rigs, Tennessee 14, Alabama 10 and Georgia 5. Union Gas & Oil Co.'s No. 4 W. D. Lester, North Weir, makes 100 bbls. flush and Garrison & Townsend's Nos. 6, 7 8 Dobyne 40.

BOWLING GREEN, Ky., Dec. 15.—That the oil producers of Kentucky are looking forward to an increase in crude prices is evidenced by the increase in development work throughout the State. At present there are 178 active drilling operations under way, an increase of 55 compared with a month ago.

The western division is in the lead with 90 drilling wells and 11 rigs . The eastern division shows 88 drilling wells and 4 rigs on locations. Sixteen of the operations under way in the eastern end are wildcats and may mean much toward extension of new development in that section.

Barren County, in the western division, is the scene of the greatest activity at this time with 30 drilling wells, while the North Weir Field of Lawrence and Johnson Counties, in the eastern division, runs a close second with 25 wells going downward.

Other counties in the State showing a slight improvement in new work are Warren and Allen in the western division and Lee, Owsley, Johnson and Magoffin in the eastern division.

Wildcat tests being made in other southern States show that the intrepid operator is trying hard to open up new territory. In Mississippi, 26 rigs are up; in Tennessee, 14; in Alabama, 10 and in Georgia, 5.

In Tennessee two wildcat tests have been brought in during the past two months which may open new areas. One in Clay County started off at the rate of 1,000 bbls. daily at 433 feet, and the other in Morgan County tested 50 bbls. at around 1,200 feet.

Nothing of importance has yet been developed in Mississippi, Alabama or Georgia.

Week's Work

A summary of the week's work in the whole of Kentucky shows 26 completions with 19 producers and a flush of 428 bbls. Compared with the previous week, this shows 1 less completion, the same number of producers and dry holes, 1 less gas well and an increase of 224 bbls. in initial production. The wells were distributed by counties as follows:

County—	Comp.	Wells	Prod.	Dry	Gas
Allen	4	3	43	1	0
Barren	4	3	39	0	1
Lee-Owsley	4	3	55	0	1
Lawrence-Johnson	4	4	220	0	0
Johnson-Magoffin	3	3	26	0	0
Owensboro district	3	1	15	2	0
Warren	3	2	30	1	0
Clay	1	0	0	1	0
Total	26	19	428	5	2
Last week	27	19	204	5	3
Difference	1	0	224	0	1

Barren County

The best well of the week in Barren County is the Wood Oil Co.'s No. 1 on the John Church farm, offsetting the Hall Baker No. 1, in the Hall Baker Pool 1¼ miles north of Glasgow, which started off at 25 bbls. from a total depth of 502 feet. The shale was found from 351 to 395 feet and the pay sand from 490 to 502 feet. Casing was set at 205 feet. A recent test of the Hall Baker well showed it to be making 16 bbls., while a test just finished on the Church showed 9 bbls. The Wood Oil Co. is drilling No. 3 William and Mildred Church, 550 feet north of the Baker, at 300 feet; No. 2 John Church is being started two locations north of No. 1. In the same area, the Consolidated Gas Co. finished its No. 1 C. Bradford, adjoining the Page gasser of the same company, for 250,000 feet of gas at 534 feet. Shale was topped at 342 feet and drilled through at 392 feet; blue muck was found from 392 to 492 feet; first pay from 492 to 509; second pay from 509 to 524 feet. The second pay showed traces of oil and was shot with 30 quarts without results. The gasser on the Page farm recently made 278,400 feet of gas on test at 475 feet. The shale was had from 300 to 392 feet.

In the Emery-Moore Pool, south of Glasgow, the Star Oil Co.'s No. 9 Ritchie tested 9 bbls. from the pay sand at 185 feet below the black shale. On the Neeley farm, east of No. 2 Childress, the Mazel Oil Co.'s fifth venture pumped 5 bbls. after 3 feet of sand topped at 479 feet was shot with 20 quarts of nitro.

Emery-Moore Pool

Star Oil Co.'s No. 13 Ritchie, No. 4 Free and No. 5 Star were drilling at 243, 245 and 420 feet, respectively; Carter Oil Co.'s No. 4 Gooden is spudding in; same company's No. 1 Jess Wininger is having water trouble in the shale; Mazel Oil Co.'s No. 6 S. Childress was spudding; Maxey & Brendal's No. 2 Oakes is a rig; Fred Moore's No. 3 Bruton, drilling at 270 feet. Casing was set at 123 feet; Baker & Moore's No. 2 Hans Gassaway, west of the Howard, was shut down in the shale; Reese and others' No. 1 Dodder, drilling at 175 feet; Zeigler Brothers, Scott & Hice's No. 3 Bradford, drilling at 300 feet. No. 1 Bradford was abandoned; Stafford & Rhoderer's No. 1 Price was awaiting a shot; Henderson Oil Co.'s No. 3 Burris, spudding; Stafford & Rhoderer's No. 2 Neeley was being cleaned out after a shot; Nelson and others' No. 1 George Dossey, drilling at 96 feet; Brewer & Co.'s No. 1 Jenkins is being tested.

Hall Baker Pool

In the Hall Baker Pool, about 2 miles north of Glasgow, the Consolidated Gas Co.'s No. 1 Pointer is spudding. McCandless and others' No. 1 Church, rigging up; Norris & Harrington's No. 1 Evans, 800 feet south of the Hall Baker, is drilling at 102 feet.

Gorby Pool

In the Gorby Pool, southwest of the Emery-Moore Pool, T. L. Gorby's No. 1 Chamberlin was standing on top of the cap rock; same party's No. 1 Bybee was being rigged up. The tools on the Cassidy and Lessenberry farms, owned by Gorby, were idle the past week; Porter & Co.'s No. 1 McLaughlin is being cleaned out after being shot; Esslinger Oil Co.'s No. 1 Bud Mansfield, drilling in cap rock at 398 feet; Lewis J. Emery & Sons Co.'s No. 1 Greer is shut down with a fishing job at 402 feet.

Other Districts

In other sections of Barren County the following wells are making hole. Bishop & Son's No. 3 Bishop; L. J. Emery, Jr., & Sons Co.'s No. 2 Dick Bridges; same company's Nos. 25 and 26 Harston; Stafford and others' No. 1 Settle; Shriver and associates' No. 1 Burton heirs, Stafford and Maxey's No. 2 Ritter Brothers is still shut down at 430 feet.

Warren County

D. T. Bolling's No. 1 McDonald in the Richpond Section, 1 mile south of Rockfield, proved a disappointment in the deep sand at 900 feet, 90 feet below the shale. This test was being watched very closely as it was the first deep hole to be drilled in this prolific shallow territory. In the shallow sand, this well showed a little gas while the deep sand showed nothing but salt water. In this same immediate vicinity, the Illinois-Kentucky Oil Syndicate's No. 6 Vance was reported to have pumped 20 bbls. from the stray sand at around 300 feet. After being pumped off for the first time it exhausted itself and is being drilled on down to the Mississippian lime at about 500 feet.

In this Richpond section, Roy Hogan's No. 3 Ford is showing for an excellent producer at 460 feet after being shot with 30 quarts. The well is now being tubed and will be placed on the pump and tested. Gardner & Dixon's No. 2 E. C. Diliard, three-quarters of a mile from production, is showing nothing so far but gas from the shallow pay.

On the John V. Covington farm, several miles south and east of Bowling Green, J. B. Felty, trustee, brought in a 10-bbl. starter at 298 feet in No. 5 well, on Block No. 8. No. 6 is spudding and will probably be finished next week.

The Wood Oil Co.'s No. 6 Oliver Grimes in the northeast extension area has just been shot and is being cleaned out. The shot failed to help the well and after being tested it will probably be abandoned.

In the McLemore-Gillespie-Price Pool, the Amfot Oil Corp. has drilled its No. 8 on the Jess Shanks to the top of the pay sand and moved to No. 9 location, which will also be drilled to the top of the pay and shut down. The Ruby Consolidated Oil Co.'s No. 5 Price-Hall, the Gillespie Oil Co.'s No. 9 Gillespie, P. H. Lavelle's No. 6 W. R. Hunton and Cunningham & Henry's No. 6 Bryant were all progressing below the shale.

In the Davenport Pool, Gipe, Carrol & Christian's No. 1 on the Perkins 10-acre tract is on top of the shallow pay; T. A. Sheridan's Nos. 3, 5, 6 and 7 Georgianna Davenport and No. 1 Jenkins were shut down; Teague's No. 1 Manning was drilling at 302 feet; unknown parties are spudding in No. 2 on the Jenkins farm, adjoining the Wood Oil Co.'s R. L. Morris lease.

Allen County

In the Wheat Pool, 12 miles southwest of Scottsville, Parson & Bastrus brought in a 20-bbl. starter in their No. 5 on the Wheat farm at 300 feet. The shale was encountered at from 168 to 213 feet and the sand from 260 to 293 feet. No. 6 is drilling below the shale. At Trammel Creek, No. 3 on the Bert Hinton place is pumping 3 bbls. at 285 feet. In the Keen Pool extension, Neeley, Lamp and others' No. 2 Clack was reported dry at 60 feet below the shale.

In the Satterfield district, west of Scottville, Arthur Dye's No. 1 H. W. Heffington was reported to be good for 20 bbls. at 339 feet, immediately below the shale.

Owensboro District

The Owensboro district of Hancock and Ohio Counties shows three completions for the week in review, two being dry.

In the Herbert school house section, the Panther Creek Oil Co. made a 15-bbl. strike in No. 11 R. M. Miller, 400 feet south of No. 10, the production coming from both the Jett and Barlow sands. In the same vicinity, 2½ miles east of the Jackson, a semi-wildcat completion on the Cusingberry tract being developed by O. C. Boop was dry in the Jett sand and as water was had in the bottom of the Barlow sand the hole was plugged and abandoned.

The test made by C. E. Daugherty on the J. P. Howard place, southeast of the Oat Neal, was dry and abandoned at 800 feet.

Cumberland County

A. S. McClintock's No. 1 Bud Kerr, in the Kettle Creek district, which produced a quantity of oil at 150 feet below the Pencil Cave, is being deepened to 325 feet below the cave. If production is had at the latter depth it will be the deepest sand yet found in that section.

The Vedder Oil Co.'s No. 1 Doll Boles at Fanny's Creek is being drilled at 638 feet after being shut down for several weeks on account of a bad fishing job.

At Sulphur Creek, W. S. Raydure is drilling No. 1 Mrs. Coop at 280 feet below the cave; Carter & Combest are deepening No. 2 on the Huddleston-Payne lease after it ceased producing from the first pay below the Pencil Cave; Wilcox Brothers were down 425 feet without a showing in No. 1 Davidson at the head of Sulphur Creek.

Eastern Division

Production in the eastern division was increased 306 bbls. a day the past week from 13 completions, 11 being producers. The best well was the Union Gas & Oil Co.'s No. 4 W. D. Lester, Section 22, in the North Weir Field of Lawrence and Johnson Counties, which made 100 bbls. flush from the Weir sand. This completion brings the total of producing wells for the Union Gas & Oil Co. to 500 in the North Weir Field. In district No. 22, Garrison & Townsend brought in their Nos. 6, 7 and 8 on the C. K. Dobyne farm for 40 bbls. each, from the Weir sand. This is one of the best properties in the new extension of the North Weir Field. These same operators have three wells on the sand and four others drilling in the shale.

North Weir Field Activities

In District No. 22, the Union Gas & Oil Co. spudded in two new wells, No. 6 on the D. H. Ferguson and No. 2 on the J. Hoolbrook, No. 2 farm. In this same district the Union Co.'s No. 6 James Diles was drilling in lime; No. 1 Caney Sparks, drilling in lime; No. 3 J. E. Hollbrook, No. 1 farm, drilling in lime; No. 35, J. J. Gambill, drilling in lime; Tom Hay's No. 1 Wayne Moon, showing gas at 500 feet; Mid-South's No. 2 W. H. Kelley was drilling at an unknown depth; Skaggs, Miller & Co.'s No. 1 C. Osborne, drilling at 432 feet; Figley, Day & Co.'s No. 5 S. C. Skaggs was reported in the sand. In district No. 22-A, the Union Gas & Oil Co.'s No. 1 Castle heirs, location; Keaton Oil & Gas Co.'s No. 29 J. Lyon, drilling in black lime.

In district No. 32, the Union Gas & Oil Co.'s No. 8 William Lester, drilling in lime; No. 9 L. H. Skaggs, drilling in lime; Cumberland Petroleum Co.'s No. 3 J. J. Skaggs, drilling at unknown depth.

In district No. 33, the Union Oil & Gas Co.'s No. 8 Laura Skaggs was drilling at 480 feet; J. T. Hare & Sons' No. 3 J. D. Bond, drilling at 532 feet; W. M. Stone's No.'s 7 and 8 Lester ,drilling in lime.

South Weir Field

In the South Weir Field, comprised of parts of Johnson & Magoffin counties, the Cumberland Petroleum Co.'s No. 6 J. P. Conley, in district No. 27, pumped 24 bbls. from the Weir sand at approximately 900 feet.

In district No. 29, the Superior Oil Corporation's No. 2 W. E. Coffee made 7 bbls. on power from the Weir sand.

In district No. 31, the Petroleum Exploration and the Wiser Oil Co. got a 5-bbl. starter in their No. 33 on the Abel Caudill from the Weir sand.

Lee-Owsley Counties

In the Idamay section, in district No. 35, of Lee and Owsley counties, Hupp Duff & Co.'s No. 1 Jim Porter is reported

(Continued on Page 150-B)

TRANSITE

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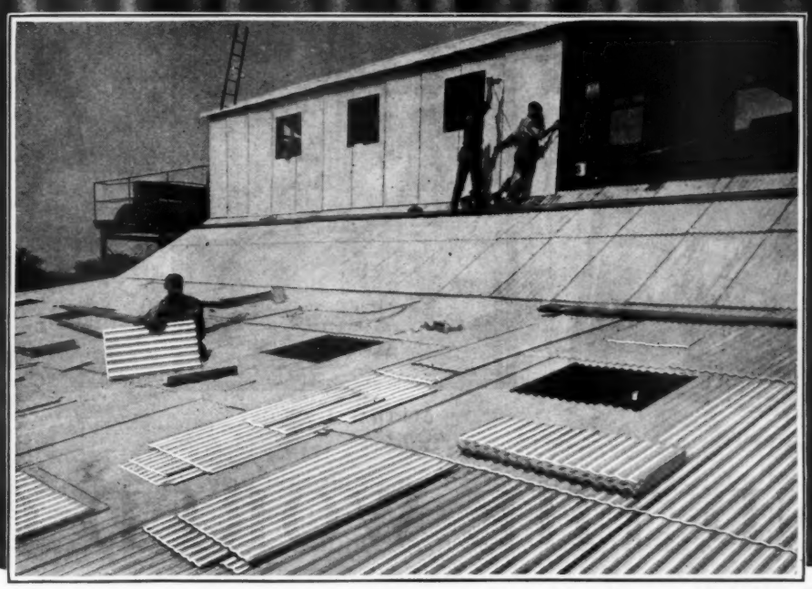

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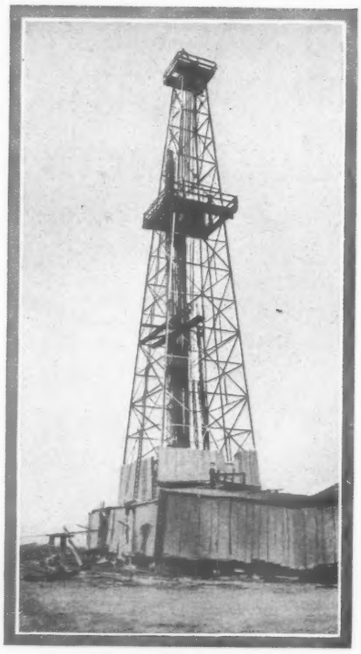

AUSTRALIA

AFRICA

AND THE WORLD OVER

EVERY month shipments of INTERNATIONAL "IDECO" Steel Derricks and Drilling Rigs go forward to the Oil Fields of South America, Australia, Africa, New Guinea, Mexico and other foreign countries. In these foreign fields, as in practically all of the producing areas of the United States, operators have chosen INTERNATIONAL "IDECO" Structural Steel Derricks, Rigs and All-Steel Equipment as the most economical and serviceable.

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& DRILLING RIGS IDECO

Fields of the Central West

By Whit

Charles Zeising and others get 30-bbl. well, Lake Township, Wood County, Ohio, Wayne Oil Co., 30-bbl. well in Allen County. D. F. Monney and others' wildcat in Auglaize County pumps 35 bbls. of oil and 40 of water. Logan Gas Co. has 50-bbl. well in Holmes County.

FINDLAY, Ohio, Dec. 15.—Outside of the Kentucky and Central Ohio fields, there were but 14 completions for the week reported from the Lima Field, Indiana and Illinois, although there does not appear to be any let up in new work in the Central West area. The weather has not reached real winter yet. Much leasing has been done recently in all the fields and spring should show an exceptionally large amount of wildcat work. Many Ohio operators have been gathering acreage in Clay and counties adjoining the big wells recently opened up in Tennessee by DaFoe and others. Toledo leaseholders in that territory are now arranging to start operations there.

Central Ohio has been the active spot of the week and there is no telling when the large gas companies will let up work, but this is expected around the holidays.

In the old Lima Field of Northwestern Ohio, the week shows a total of 10 wells completed with 3 dry holes and a flush production of 141 bbls.

In Montgomery Township, Wood County, George F. Ryder No. 2 Co., drilled in No. 4 located 250 feet from the north line and 450 from the west line of the L. Leffingwell farm, section 24. Top of sand was found at 1,224 feet and drilled 53 feet in to a total depth of 1,277 feet and after shot pumped 10 barrels the first 24 hours. In Lake Township, Charles Zeising and others' No. 3, located 200 feet from south line and 800 from west line of the Emil Berndt farm, section 36, pumped 30 barrels after given a shot, at 1,310 feet. Same company's test on the southeast corner of the Hall Brough farm, in the southeast quarter of Section 2, Troy Township, same company, proved a dry hole when drilled to 1,300 feet.

In Spencer Township, Allen County, the Wayne Oil Co., formerly reported as W. W. Roe, drilled in No. 3 well located 300 feet from the south line and 600 feet from the west line of the Anna Youngpeter farm, Section 23, the well pumping 30 bbls. the first 24 hours.

Auglaize Wildcat

The well of most importance in the Lima Field for the week was the wildcat drilled by D. F. Monney and others, located 800 feet from the south line and 250 from the east line of the N. Steineman farm, in the southeast quarter of Section 28, Jackson Township, Auglaize County, about 10 miles south of St. Mary's and a short distance to the northwest of Minster. The first 24 hours this well pumped 35 bbls. of oil and 40 bbls. of water. This test is in the almost extreme southern part of Auglaize County and not far removed from the lines of Shelby and Darke Counties, and may mean the finding of a connecting link between the recently discovered fields in the two last named counties with the old fields of years ago. It is also located not a great distance from the Laramie reservoir. During the past several weeks a large amount of acreage has been leased up and it looks as though the leasers will extend as far south as Dayton.

In Harris Township, Ottawa County, J. F. Smith's test in the northwest corner of the August Wagner farm, in the southwest quarter section 14 was drilled to a total depth of 1,308 feet and showed no oil for the first 24 hours, although a good body of salt water. This is to the northwest across the Portage River from Elmore.

In Hopewell Township, Mercer County, A. J. Metzger's second well located 1,100 feet from the north line and 250 feet from the east line of the S. Fetters farm, section 20, pumped 20 barrels the first 24 hours.

The wildcat well of Fred Biel and others on the northeast corner of the Joseph Manier, St., farm in the northeast quarter of Section 17, Wayne Township, Darke County, pumped 8 bbls. of oil the first 24 hours and then started making salt water, and will probably be pulled out and abandoned.

Another wildcat well just completed is that of W. M. Morgan located in the southwest corner of the Fred Hagermeyer farm, mapped as the Henry A. Theaman farm in the southwest quarter of Section 16, Van Buren Township, Shelby County. This well produced 8 barrels of oil the first 24 hours and, according to owners will no doubt be abandoned.

Far to the south of the old development of the Trenton Rock Field, the Sun Oil Co., drilled in a wildcat well on the northwest corner of the Charles M. Oder farm, in the northwest quarter of Section 11, Texas Township, Crawford County, and got a duster. Top of Trenton was found at 1,774 feet nd drilled 649 feet in the Trenton to a depth of 2,423 feet, where it was abandoned. In September this company drilled a test on the northeast corner of the Woster Reidel farm, in the northwest quarter of the same section finding the top of the sand at 1,784 feet and drilling it 630 feet in to a depth of 2,414 feet. The well was reported to have done 20 bbls. of oil when it went to salt water. This will probably wind up the test work for that secton for some time to come.

Central Ohio

Summing up of operations reported for the week in the Central Ohio oil and gas area shows a total of 29 wells, of which two were oil wells, with a production of 55 bbls., 4 dry holes and 22 gas wells. This is a strong week for the field, and indicates the gas companies are working overtime to secure plentiful supply of the natural fuel, which is getting to be a scarce article, especially when cold days come. During the same period there were 19 new locations staked out and 13 wells started drilling.

In Hanover Township, Ashland County the Logan Gas Co., drilled a very fair gas well as a second test on the George Cranagey farm, Section 26, and a dry hole in a second well on the Perry Black farm, Section 17.

In Harrisville, Township, Medina County, the Ohio Fuel Gas Co. drilled a very light gas well at a test on the Henry Garmon farm, Section 15, and the Logan Gas Co., a light gas well in a test on the J. E. Zimmerman farm, lot 80. In Litchfield Township, the Ohio Fuel Gas Co., encountered a duster at a test on the Frank Burrer farm, lot 46. In Lafayette township, same county, the Logan Gas Co. drilled in a dry hole in No. 4 on the Medina County Infirmary farm, section 5, and one of the same kind in a test on the Mary McCleary farm, in Section 8.

In Columbia Township, Loraine County, a fair gas well was found by the Logan Gas Co. in its test on the S. A. Ives 50 acres, Lot 74, the gas being found at a shallow depth of 697 feet. In Sheffield Township, same county, A. J. O'Donnell's test on the Rose Burrell's 150 acres, Lot 21, is estimated at 500,000 feet.

In Wooster Township, Wayne County, the Ohio Oil Co., drilled a light gas well at No. 1 on the L. I. Buchanan farm, section 32. In Gannan Township, same county, the Ohio Fuel Gas Co., struck an averge gas well at No. 3 on the S. Whonsettler farm, Section 16, and also a fair gas well in No. 1 on the Clara L. Sells farm, Section 15. This company also found a good gas well at its No. 2 located 400 feet from the north line and 300 from the south line of the S. J. and E. Whonsettler farm, Section 21, at a depth of 3,300 feet, and in the Clinton formation.

In Cannan Township, Wayne County, C. A. Rice and others have what shows for a 15 bbl. oil well at a test on the R. J. Whonsettler farm, Section 15, at 3,250 feet. The well is in the southwest corner of the farm. Arthur & Mills' No. 3 on the E. & S. Myers farm, Section 29, that looked a gas well, has turned to an oil producer around 15 bbls. F. H. Hodge, trustee, reported as Butler Brothers' No. 3, located 600 feet from the south line and 1,200 feet from the west line of the Daniel Wiles farm, Section 21, is a fair gas well at 3,250 feet.

In Benton Township, Hocking County, the Logan Gas Co. drilled in an above-the-average gas well in a test on the J. and Cora Cain farm, Section 15.

Holmes County

In Hardy Township, Holmes County, the Logan Gas Co's test on the Scott V. Mast 40 acres, Section 9, shows 1,000,000 cubic feet gas and 50 bbls. of oil. In Monroe Tonwship, same county, the Ohio Fuel Gas Co.'s No. 1 on the B. P. & Lena Uhl 100 acre farm, Section 15, is a very fair gas well, while No. 2 Oscar Korns farm, Section 12, is an exceptionally good gas producer. The Central Ohio Gas Co., also has a nice gas well at a second test on the Thomas Allison farm, Section 2, while the East Ohio Gas Co.'s No. 2 on the Milton J. Lowe farm, Section 10, is estimated at 25 bbls.

In Franklin Township, Jackson County, the Ohio Fuel Supply Co.'s No. 1 on the Matilda Mercer 102-acre farm, Section 14, is a very light gas well, while its second test on the Mary B. Emmons 40-acres, Section 36, Lick Township, is a good gas well.

In Carthage Township, Athens County, the Jay Oil and Gas Co., landed what is reported a 3,000,000-foot gas well at its second test on the Bailey-Tedrow farm, Section 6, and the Ohio Fuel Gas Co., has a very light Keener sand gasser in a test on the Union Trust Co.'s farm, Section 4, at 1,337 feet. In Rome Township, a very nice Maxon sand gasser was drilled by the Rice Oil and Gas Co., in its No. 5 on the W. B. Rice farm, Section 23, at 829 feet.

In Sutton Township, Meigs County, the Ohio Fuel Supply Co., struck a good gas well at a test on the M. L. Easterday farm, Section 18.

In Richfield Township, Summitt County, the East Ohio Gas Co. has a light gas well at a second test on the E. H. Morton farm, Section 19.

New Operations

In Hanover Township, Ashland County, the Ohio Fuel Supply Co., is drilling a test on the Rhoda Black 138 acre, Section 16. This company made a location for No. 1 located 660 feet from the south line and 600 from the west line of the C. Paul 40 acres, Section 26, and for No. 1 located 600 feet from the north line and 650 from the east line of the C. D. Maxwell 40 acres, in the same section.

In Orange Township, Ashland County, the well reported as owned by Hulse and Kuntz, on the A. J. McClelland farm, Section 4, is owned by Ringler and others instead. In Greene Township, same county, the Ohio Fuel Gas Co. made location for a test 660 feet from the south line of the C. Casner 43 acres, Section 22.

In Columbia Township, Lorain County, the Ohio Fuel Gas Co., has started the drill at No. 1 on the C. E. Ruder 106 acres, Lot 13.

In Cannan Township, Wayne County, Burtner, Morgan & Stephens are drilling No. 1, Section 22. Brinkerhoff and others made a location for No. 4 on the northwest corner of the H. H. Armstrong 160 acres, Section 30. Charles Hower and others made a location for No. 2 on the northwest corner of the R. C. Cockrell 83 acres, Section 5. Ohio Fuel Gas Co., made location for No. 2 located 1,000 feet from the north line and 300 from the east line of the S. L. Whonsettler 165 acres, Section 20, and for No. 2 in the southwest corner of the E. J. Bets 61 acres, Section 16.

In Monroe Township, Holmes County, the Central Ohio Gas Co., is getting busy. This company has started the drill at No. 1 W. C. Bird farm, Section 7, and made locations for three new wells: No. 3 on the northeast corner of the Oscar Korns 100-acre farm, Section 3; No. 1 in the southeast corner o fthe Byron Martin 45 acres, lot 7, and No. 2 in the northeast corner of the T. T. Finney 56 acres, lot 3. The Ohio Fuel Gas Co., is drilling No. 1 on the Alma Martin farm, lot 7. In Richland Township, same county, the East Ohio Gas Co., made a location for a wildcat 350 feet from the north line and 850 from the west line of the John W. Patterson 47 acres, lot 5. This company has started the drill at its test on the Homer A. Bell farm, Section 17, Prairie Township. In Kilbuck Township, same county, the Pure Oil Co., has started a second test on the southwest corner of the A. Purdy 80 acres, lot 8.

Jackson County

In Washington Township, Jackson County, the Ohio Fuel Oil Co. made a location for a wildcat venture on the S. H. Ogiers 116 acres, section 14, and the Ohio Fuel Gas Co., a location for a test on the Martha O. Anthony 46 acres, section 26. In Lick township, the same company staked a location for a test on the Eliza Cherrington 80 acres, Section 36. In Franklin Township, same county, same company, made a location for a second well on the George W. Westlake 187 acres, section 11. In Coal township, the Ohio Fuel Co., started drilling No. 1 on the C. W. Haslett 40 acres, section 30, and made a location for a test on the B. B. Rice 65 acres, Section 3. The Ohio Fuel Gas Co., made a location for a test on the Ora Ramsey 56 acres, Section 21, Milton Township, Jackson County.

McBride and others started the drill at their No. 1 on the Watkins 38 acres, Section 2, Carthage Township, Athens County. The Ohio Fuel Gas Co. made a location for No. 3 on the Thomas Reed 18 acres, Section 5. In Troy Township, McBride and others are drilling No. 3 on the Fritz Ahrendt 97 acres, Section 36, and the Ohio Fuel Supply Co. located a test on the Nettie Richardson 65 acres, Section 36.

In Sutton Township, Meigs County, the Ohio Feul Supply Co. made locations for No. 1 on the Robert Crew No. 2 farm of 26 acres, Section 23 and for No. 1 on the Emma Williams 26 acres, Section 24.

In Richfield Township, Summitt

(Continued on Page 162)

WHAT MAKES GOOD PIPE?

THE metal should be of fine, even-grained, homogeneous steel, expertly supervised through every process of manufacture. Frequent inspection and tests should be given to insure a continuously uniform quality of material. The steel (Bessemer) should have a low carbon content—approximately .07 per cent—which should not vary more than .01 per cent in a year's output.

The pipe should have a high tensile strength, averaging 58,000 lbs. per sq. in.; an elastic limit of approximately 36,000 lbs., either transversely or longitudinally; an elongation in 8 inches averaging 18 to 24 per cent; should be easy to thread; sufficiently ductile for making bends and coils and adapted to making various kinds of joints.

The pipe should be suitable for any type of service—oil, gas, water, steam, air—structural or mechanical; available in all sizes, weights and thicknesses—and in double lengths in certain sizes; furnished with practically any type of joint, or plain end for patent coupling or autogenous welding; should have clean, smooth interior and exterior surfaces; available with various types of efficient coating; and be resistant to corrosive influences.

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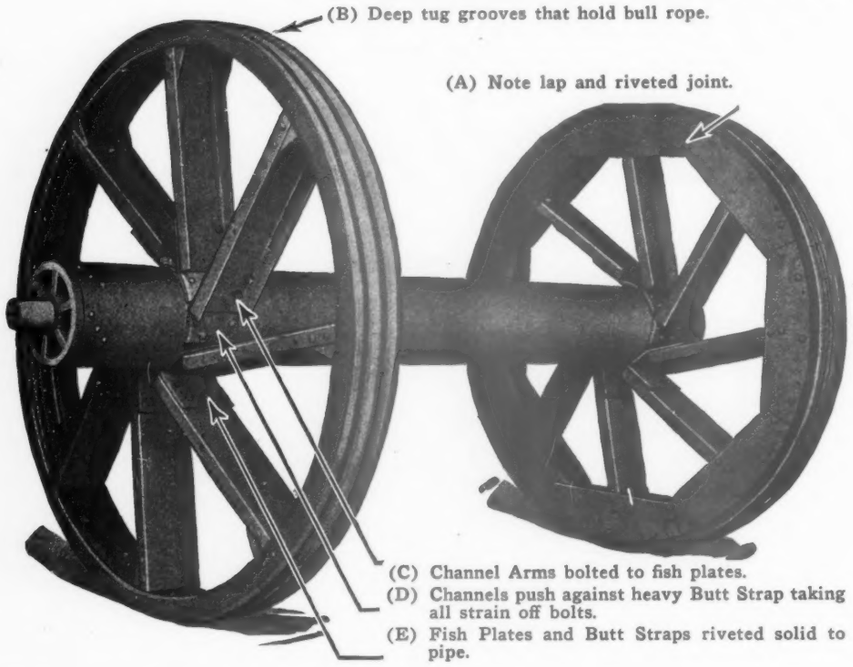

(B) Deep tug grooves that hold bull rope.
(A) Note lap and riveted joint.
(C) Channel Arms bolted to fish plates.
(D) Channels push against heavy Butt Strap taking all strain off bolts.
(E) Fish Plates and Butt Straps riveted solid to pipe.

Marion Steel Bull Wheels

The Marion Steel Bull Wheel is made up of three sections, shaft, tug wheel and brake wheel. The tug rim is made of one piece steel plate rolled into the grooved rim and has no joints. The grooves are smooth and polished. The shape of the groove grips the rope firmly without clinging. It is impossible to injure the bull rope by bad joints or slipping.

The shaft is so constructed that the arms bolt on to the plates but the thrust is against the shoulder plates which are firmly riveted to the shaft. Since the load is removed from the bolts the Marion Bull Wheels stand the most severe shocks.

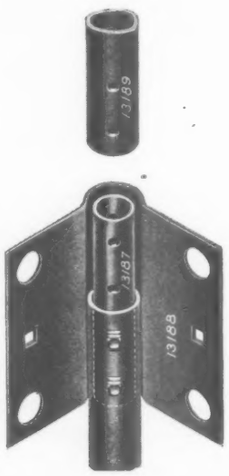
The gudgeons are made of our own special mixture, producing higher strength, double that of cast iron. They are riveted to the shafts with eighteen rivets each and cannot come loose. Any pair of wheels and any shaft will go together.

Marion Steel Calf Wheels

The Marion Steel Calf Wheel has the same construction as the Steel Bull Wheel. The gudgeons are riveted to the shaft with eighteen rivets each. The arms bolt on to the hub plates so that thrust is against the shoulder plates which are firmly riveted to the hub. The load is on the shoulder plates and not on the bolts.

The shaft is fitted with cast iron stiffeners to prevent the pipe from crushing under heavy load. Drive plates are riveted to the side plates to drive the sprocket rim. Marion Calf Wheels are built in sizes to suit the work required.

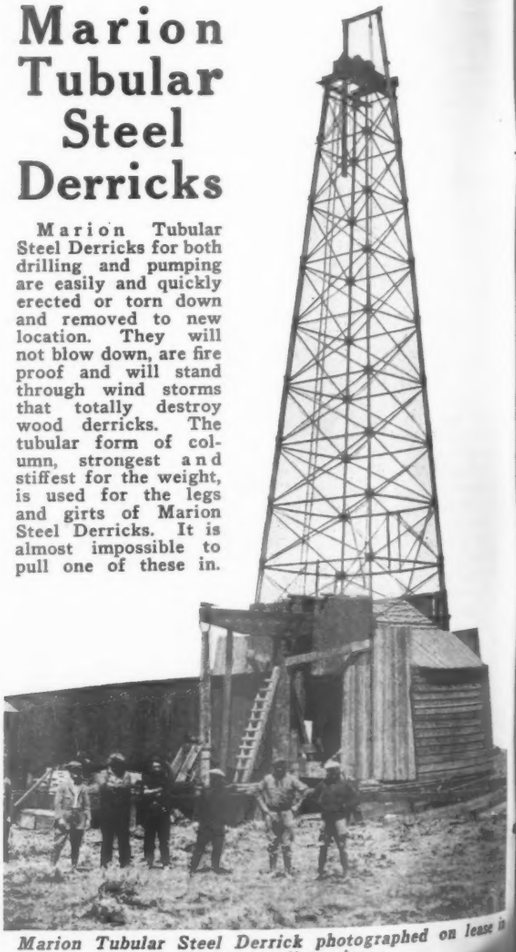
View of Marion Steel Calf Wheel.



The ends of the legs are rigidly held together by inner pipe member which is inserted inside the legs and the ends of the legs are bolted through inner pipe members to corner plate. This eliminates the possibility of the legs jumping out of clamp sockets, should strain suddenly be released when derrick is under extreme load.

Marion Tubular Steel Derricks

Marion Tubular Steel Derricks for both drilling and pumping are easily and quickly erected or torn down and removed to new location. They will not blow down, are fire proof and will stand through wind storms that totally destroy wood derricks. The tubular form of column, strongest and stiffest for the weight, is used for the legs and girts of Marion Steel Derricks. It is almost impossible to pull one of these in.



Marion Tubular Steel Derrick photographed on lease in Wyoming oil territory.

Marion Line of Oil Well Equipment

View of Marion High-Test Sucker Rod

(Name Registered)

Made of solid one-piece construction with no welding, you are assured of uninterrupted service. The special design of the shoulder of Hi-Test Sucker Rods eliminates the possibility of breakage at this point. The taper is very gradual

THE MARION LINE

Marion Steel Band Wheels

The flanges of the Marion Steel Band Wheels are cast iron, faced on the inside. The arms are 12 in. channel and riveted to the flanges. The rim is of wood cants staggered and bolted between steel plates which overlap. The tug rim is made of pressed steel the same as the tug rim of steel bull wheels and riveted to arms. The channels set against the shoulder on the shaft and each is securely fastened to hub with 10 rivets. These wheels are practically indestructible.

Marion Steel Tug Rims

The Marion Steel Tug rim for wood or steel band wheels is made of one piece steel rolled by our special process (patent pending) to perfect shape. Rims are perfectly round and extremely stiff.

The groove holds the bull rope with a good strong grip but readily releases it. There are no joints in these rims and the grooves are perfectly smooth.

Eight one-piece steel brackets are securely riveted to the rim for attaching to the band wheel.

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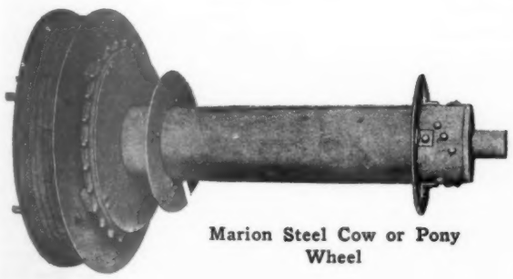
6—No. 205 Marion Band Wheel Powers.
7—No. 206 Marion Sand Proof Working Barrel.

Special Hi-Test Sucker Rod Bulletin.

View of Marion Steel Band Wheel.

View of Marion Steel Tug Rim.



Marion Steel Cow or Pony Wheel

Marion Hi-Test Sucker Rods

(Name Registered)

Marion Hi-Test Sucker Rods are recognized as superior—on account of their strength and efficient service. They are made from special analysis steel, with no welding, leaving no weak spots. The special, improved design of the taper at the shoulder of the Marion Hi-Test Sucker Rod eliminates trouble of sucker rods catching on tubing when running rods in. The special steel used in the Marion Hi-Test Sucker Rods gives them much greater strength than ordinary mild steel or wrought iron and positively will not break under the strain that snaps the regular steel or wrought iron sucker rod. The Marion Hi-Test Sucker Rods successfully handle the deepest wells and most difficult jobs.

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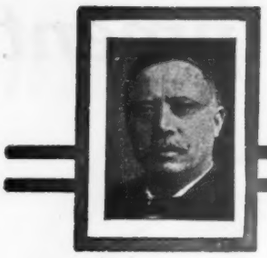


Pennsylvania-West Virginia

By D. S. Wakenight

Chartiers Oil Co. well in Coal Township, Perry County, Ohio, makes 130 bbls. Pure Oil Co. has 50-bbl. well in Sherman district, Boone County, West Virginia, and 20-bbl. well in Fairfield County, Ohio. Harris & Co. get 25-bbl. producer in Washington County, Ohio. Monongahela Co., 30-bbl completion.

PITTSBURGH, Pa., Dec. 15.—The eastern fields have experienced the first week of real winter weather. As a result, fewer wells were completed and in the list only a few better than average producers. Among operators and producers the consensus of opinion no longer prevails as to an early advance in the crude market.

Refiners in Pittsburgh and vicinity are still unable to get all the Pennsylvania grade crude needed to meet their requirements. Just a few are running to capacity. A very little of the Somerset grade is coming to Pittsburgh and none from the West. Despite the slowing down in the demand for gasoline, several refiners have not been able to meet the demand and have had to go into the open market and make purchases to fill their contracts. The only change in market conditions during the week was an advance of 1 cent a gallon in both automobile and high test.

The deep sand territory in southeastern Ohio again furnished the best producer completed during the past week. It is the Chartiers Oil Co.'s No. 192 on the Hocking Valley Products Co.'s property, in Section 32, Coal Township, Perry County, credited with a production of 130 bbls. the first 24 hours after completed and shot in the Clinton sand. In Section 22, Richland Township, Fairfield County, the Pure Oil Co. completed a test on the Owen Smith farm good for 20 or 25 bbls. a day. In Green Township, Hocking County, the Preston Oil Co. gave its old gasser on the J. W. Tom farm a shot in the Clinton sand and turned it into an oil producer good for 7 or 8 bbls. a day. This well was completed as a gasser several years ago. In the northeast quarter of Section 22, Starr Township, the same company was not so fortunate when it drilled a test on the Ethel Cramblit farm through the Clinton sand and scored a duster.

Trenton Rock Duster

Another effort to secure production in the Trenton Rock failed when the Edward H. Everett Co. drilled in its test on the John Patton farm, in Burlington Township, Licking County, and got a duster. The record so far is two producers and two dry holes. The desire to drill to the Trenton is not so great as a few months ago. At this time there are but two wells drilling to the Trenton Rock, the Carter Oil Co.'s test on the Tish farm, and W. W. & A. T. Wehrle's second test on their own farm, both in the vicinity of Newark City. In Lot 11, Monroe Township, Holmes County, the Rocky River Development Co. got a gasser good for 500,000 feet when it drilled No. 4 on the A. B. Jarvis farm through the Clinton sand. In Newton Township, Licking County, E. J. Edmonds & Co. have a light pumper in the Berea grit at No. 4 on the J. I. Hughes farm. The Arkansas Fuel Oil Co. got one of the same kind when it drilled No. 20 on the L. V. Dugan farm, located in Section 21, Jackson Township, Knox County, through the Berea grit. In Section 36, Enoch Township, Noble County, Fremont Haynes and others have a 5-bbl. pumper in the Macksburg 500-foot sand at a test on the E. O. Davis farm. This location is on the edge of the village of South Olive.

Washington County had a number of completions and one a fair producer. Harris & Co.'s second test on the William Yost farm, in Independence Township, is good for 25 bbls. a day in the Big Injun sand. In Grandview Township, E. W. Thornily & Co. got a 5-bbl. pumper in the same formation when they completed No. 4 on the A. T. Dye farm. In Sec. 1, Muskingum Township, C. B. Long & Co. have a duster in the Macksburg 500-foot sand at No. 3 on the Wallace P. Wagner farm. Two and one-half miles south of Ulrichsville, Hill Township, Tuscarawas County, a company composed of local talent completed a wildcat on the Eddy farm, reported good for 2 bbls. in the Berea grit. In Section 22, Knox Township, Columbiana County, the Coraopolis Savings & Trust Co. completed and shot in the Berea grit No. 11 on the A. L. Stoffer farm, good for 4 or 5 bbls. a day.

Starting New York

Elder Griggs & Co. have started to drill a test on the Samuel Barnes farm, 1,200 feet west of the Planet Oil Co.'s second test on the S. B. Dittoe farm, in Section 20, Reading Township, Perry County. In Section 23, Pleasant Township, C. L. Bullock & Co. started to drill on the John Graham farm. The Allegheny Oil Co. is drilling on the Elizabeth Harrington farm. The Midland Oil Co. is moving rig material to a location on the Murray Bowser farm, in Bowling Green Township, Licking County. The Carter Oil Co. is drilling on the E. W. Skinner farm. In Section 11, Washington Township, Monroe County, the same company is drilling a test on the James W. Moore farm. In Liberty Township, Washington County, the Dutch Oil Co. started to drill on the Christ Oliver farm. In the same township, Holdman & Co. are drilling a test on the J. I. Farley heirs' farm. In Washington Township, Monroe County, the Carter Oil Co. is drilling a test on the J. F. English farm. In the same township, the California Corporation is drilling a second test on the Eliza McNeice farm. In Ward Township, Hocking County, the Carter Oil Co. has a rig up on the Akers heirs' farm.

West Virginia

The best the West Virginia fields had to offer during the past week was a 50-bbl. producer, the Pure Oil Co.'s No. 199 on the Williams Coal Co.'s property on Joes Creek, Sherman district, Boone County. The well produced 50 bbls. the first 24 hours after drilled through and shot in the Berea grit. In Union district, Pleasants County, the Monongahela Oil Co. got a 30-bbl. producer in the Cow Run sand at No. 9 on the Dora E. Wagner farm. All other completions are light wells, dry holes and gassers and show what a hard proposition operators are up against in trying for new production. One-half mile below Braden Station, on Indian Creek, McElroy district, Tyler County, the Hope Construction & Refining Co.'s test on the Noah Booher farm is a gasser in the Big Injun sand. In Murphy district, Ritchie County, the same company has a 10-bbl. pumper in the Maxon sand at a test on the Davis farm. On Little Painter Creek, Grant district, E. E. Pope & Co.'s second test on the B. Fox farm is a duster in the Big Injun sand.

On Charleys Creek, Grant district, Cabell County, the Harshbarger Oil & Gas Co. has drilled its test on the J. T. Blackwood farm 1,300 feet below the Berea grit. It is a light gasser in the Berea grit and dry below. On Sanders Creek, in the same district, the Ohio Fuel Oil Co. drilled its test on the George Alexander farm 1,325 feet below the Berea grit to a total depth of 3,820 feet. It is dry in all formations. On Charleys Creek, the Midway City Gas Co. started to drill a test on the J. M. Johnson farm. In Clay district, Ritchie County, the Stephens Oil Co.'s second test on the Z. Darnell farm is not good for more than 5 bbls. a day in the Cow Run sand. It is a dark oil producer and when drilled in last week showed for a much larger well.

Speechley Sand Gassers

In Grant district, Harrison County, the Vesper Oil & Gas Co. has drilled its test on the A. A. Smith farm to the Speechley sand, total depth, 3,127 feet. It is a light gasser. In the same district, the Hope Natural Gas Co. has a gasser in the same formation at a depth of 3,181 feet on the Smith heirs' farm. In Union district, the same company's second test of the A. B. Coffindaffer farm is dry and abandoned at a total depth of 3,275 feet. In Greene district, Wetzel County, the Gordon Oil Co.'s test on the May Morgan farm is dry in the Big Injun sand and undecided as to drilling to the lower sands. In Church district, J. A. & L. C. Lemley have a gasser in the Maxon sand at No. 6 on the Croit Hunt farm. The Hope Construction & Refining Co.'s test on the Arthela Eddy farm, in Paw-Paw district, Marion County, is a gasser in the fifth sand. In West Union district, Doddridge County, the Clifton Oil & Gas Co.'s No. 11 on the Joseph Freeman farm is good for 15 bbls. a day in the Big Injun sand. In Spencer district, Roane County, the United Fuel Gas Co. has a gasser in the salt sand on the C. C. Riddle farm. McIntosh & Co. have a light pumper in the Big Injun sand on the L. A. Short farm. In Reedy district, Wirt County, the Heck Oil Co.'s test on the Sanson George farm is dry in the Berea grit and abandoned.

Lincoln County

All late completions in Lincoln County are gassers. In Union district, Roy & McComas have one at a test on the Cane Adkins farm and a second test on the Benjamin Adkins farm is a gasser in the Berea grit. In Duval district, the Grant Gas Co.'s test on the Andrew Spurlock farm is a gasser in the same formation. The Commercial Gas Co. got one of the same kind at a second test on the James Bays farm, in Curry district, Putnam County. In Central district, Doddridge County, the Hope Construction & Refining Co. drilled through the Gordon sand at a test on the H. B. Williams farm. It is dry in this formation and a light gasser in the Big Injun sand. In Collins Settlement district, Lewis County, the White Oak Oil & Gas Co. has a duster in the Big Injun sand on the F. L. Long farm. It has been abandoned. In Otter district, Braxton County, the Carter Oil Co.'s test on the G. E. Bollinger farm is a gasser in the Gordon sand. In the same district, the West Virginia Central Gas Co.'s No. 6 on the C. L. English farm is a duster in the Big Injun sand. The Chemical Oil Co. drilled down its old No. 1 on the G. W. Taylor farm, in Sheridan district, Calhoun County. Having found nothing at a total depth of 3,320 feet it was abandoned.

Ritchie County Completions

In Clay district, Ritchie County, Charles Lewis & Co. are now through the Big Injun sand at a test on the Henry Markle farm and dry. In the same district, S. Collins & Co. have a 10-bbl. pumper in the salt sand at a second test on the Z. Darnell farm. In the same district, S. W. Collins & Co.'s second test on the C. E. McCullough farm is a 5-bbl. pumper in the Big Injun sand. In Union district, Barker & Smith have a very light pumper in the same formation at a test on the John Allender farm. In Murphy district, the Hope Natural Gas Co.'s test on the John J. Davis and Andrew Bird farms are gassers in the Big Injun sand. In Clay district, Wood County, the New York Petroleum Co.'s No. 10 on the Elizabeth Musser farm is very light in the Cow Run sand.

Dry in All Sands

In Simpson district, Harrison County, the Hope Natural Gas Co.'s test on the Martin Graves farm is dry in all sands. The Philadelphia Oil Co.'s test on the J. W. Wilson farm in Collins Settlement district, Lewis County, is a gasser in the Gantz sand. In West Union district, Doddridge County, the Columbia Carbon Co. has drilled No. 16 on the Lewis Maxwell farm through the Gordon sand. It is dry and has been abandoned. In McElroy district, Tyler County, the Hope Natural Gas Co.'s test on the N. Booher farm is a gasser in the Keener sand. The same company has a very light show at its test on the McNulty-Ayres farm, in Sherman district, Calhoun County. In Center district, W. H. Bickel has a gasser in the Big Injun sand at No. 3 on the Martha E. Stump farm. The Carter Oil Co. completed a Big Injun gasser at a test on the John Hall farm in Troy district, Gilmer County. In Center district, the Hope Natural Gas Co.'s test on the E. L. Collins farm is a gasser in the same formation. In Otter district, Braxton County, the West Virginia Central Gas Co. has a gasser in the salt sand at a second test on the Perry H. Westfall farm. In Union district, Tyler County, the South Penn Oil Co.'s test on the L. H. Hess farm is a 5-bbl. pumper in the salt sand. On Franks Run, McClelland district, Doddridge County, the same company drilled its No. 1 on the F. Y. Harner farm from the Big Injun to the fifth sand to a total depth of 3,300 feet. It is a light gasser in the lower formation. In Sherman district, Calhoun County, the Carter Oil Co.'s test on the T. G. Force farm is through the Berea grit and dry.

Ritchie County Tests

In Clay district, Ritchie County, Parker & Co. have rigged up at a test on the Ray Hammond farm. Taylor & Co. have started to drill on the Thomas Doak farm. In Grant district, the Warrior Petroleum Co. is rigging up on the A. R. Phillips farm. Hood & McQuain are moving in tools to a location on the A. W. Zickafoose farm, in Union district. Spearman & Co. have made a location on the Reagan farm, in Murphy district. In the same district, the Hope Natural Gas Co. is rigging up on the First National Bank property.

In Burning Springs district, Wirt County, the Hope Construction & Refining Co. is building a rig on the Rebecca J. Hays farm. In Central district, Doddridge County, the Mud Lick Oil & Gas Co. started to drill a second test on the Mary Bee farm. In Collins Settlement district, Lewis County, the West Fork Oil & Gas Co. started to drill a second test on the Enos Clark farm.

In Union district, Tyler County, Morgan Henderson has just started to drill a second test on the Nora Monteith farm. In Center district, Gilmer County, the Hope Naural Gas Co. is fishing at 800 feet on the L. R. Moore farm. In the same district, the Ohio Fuel Oil Co. is drilling at 900 feet at a test on the Viola Curry farm. In DeKalb district, Obey Beall is rigging up on the W. A. Simmons farm. The Hope Construction & Refining Co. has started to drill on the Chess Pot-

(Continued on Page 150-B)

DAYTON
Collar Leak Clamps

No. 9

Note construction of locking device on flanges . . . It is impossible for the flange joints to spread.

THE DAYTON PIPE COUPLING CO.
DAYTON, OHIO

MEN KNOWN IN OILDOM

T. J. Thompson

T. J. Thompson, member of the board of directors, Standard Oil Company (Indiana) and general manager of sales, has a splendid record of achievement. He came to this country from England when only 9 years old, going to Grand Rapids, Mich., where he lived until he was 18 years old. He attended the public schools of that city. About that time, he became a cowpuncher in the Panhandle country of Texas, remaining there about 18 months.

Mr. Thompson returned to Grand Rapids and, at the age 20, went to work for the West Michigan Oil Company, which was a subsidiary of the old Standard Oil Corporation. He started in as a common laborer, then became a tank wagon driver, then a warehouse superintendent, and subsequently lubricating salesman.

In 1915, he came to Chicago as assistant manager to the general manager, but, during the same year he returned to Grand Rapids as manager of that division. He remained in that capacity until 1919, when he became manager of the Detroit division. Late in 1919, he was made manager of the Chicago division and in 1921 general manager. In May, 1922, he was made a member of the board of directors.

PERSONAL PARAGRAPHS

John Penrose of the National Oil Company, is spending the winter in Los Angeles and San Francisco.

* * *

Howard F. Nash, general manager of the Doherty interests in Mexico, has left Tampico for New York on company business.

* * *

C. S. Sands, of the Sands Petroleum Company, Okmulgee, Okla., has left for a month's trip to New York and other eastern cities.

* * *

H. W. Platenberg of the Axelson Machine Company's Tulsa district office, left December 11 for a two weeks' trip to California.

* * *

W. L. Connolly of the Mammoth Oil Company, of Casper, Wyo., spent a few days in Toledo, Ohio, with his mother, who has been very ill.

* * *

John Jefferies, superintendent of the Pure Oil Company's refinery at Ardmore, Okla., was married recently to Miss Montie Worley of Ardmore.

* * *

Roland Neal, manager of the Okmulgee store of the International Supply Company, and Miss Helen Brady, of Okmulgee, Okla., were married recently in Tulsa.

Hugh Donovan, Jr., proprietor of the Donovan Boiler Works, Parkersburg, W. Va., makers of oil country boilers, was a recent visitor in Tulsa.

* * *

F. W. Finley of the National Products Company, Fort Worth, Tex., was in Tulsa last week visiting his brother and calling on the gasoline trade.

* * *

S. C. Beers, of the Eastern Gas Company, who was in Okmulgee, Okla., for the past month attending to business affairs, left last week for his home in Akron, Ohio.

* * *

C. Ray McShane, manager of the Oil Well Supply Company office in Casper, Wyo., returned to his desk recently after a pleasant vacation spent in Missouri, Iowa and Illinois.

* * *

W. H. Merritt, vice president and general manager of the Cities Service Oil Company of St. Paul, Minn., has been visiting the Bartlesville offices of the Empire Companies.

* * *

Harry J. Walker, assistant general manager of sales of The Andrews Steel Company, Newport, Ky., is making a trip through the Mid-Continent territory in the interests of his firm.

* * *

V. R. Oakley, superintendent of the Waite Phillips refinery at Okmulgee, Okla., has been transferred to the same company's refinery at Wichita, where he now holds a similar position.

* * *

G. D. Paine, district manager of the Rocky Mountain branch of the Frick-Reid Supply Company at Casper, has resigned. District headquarters will be maintained at Denver, with C. E. Dowd as manager.

* * *

Bob Dunlap, who operates in the Smackover Field of Arkansas in partnership with W. G. Skelly of Tulsa, has returned from a hunting trip of several weeks in Arizona, about 160 miles back in the hills from Holbrook.

* * *

C. Bert Sage, well known oil operator of Toledo, Ohio, returned during the week from a hunting trip to New Brunswick. He shot and brought home a 1,600-pound moose, which he has been exihbiting at his place of business.

* * *

John Sandburg, president of the Sandburg Oil Company, of Long Beach, Calif., is in Salt Lake City, where he will open an office from which he will direct operations at Cisco and Crescent Eagle Dome in eastern Utah.

* * *

John Wilson, vice president and general manager of the Midwest Torpedo Company, with headquarters in Casper, Wyo., recently returned from a trip to New Mexico, where he inspected prospects for oil in the Pecos Valley area.

* * *

Dr. D. B. Dow, head of the petroleum research laboratory of the United States Bureau of Mines at Laramie, Wyo., attended the convention of the Rocky Mountain Oil & Gas Association in Casper recently but his trip was cut short due to the serious illness of his wife.

* * *

Dr. J. L. Henderson of Trinidad, B. W. I., advisor for a number of British oil companies operating in Trinidad, is in Canada, conferring with the Dominion Government in regard to oil bounties. Dr. Henderson is interested in oil production in both Ontario and New Brunswick.

* * *

Tom C. Duvall, formerly in the Wichita Falls, Tex., office of the Continental Supply Company, has been placed in charge of the company's store at Olney, Tex., as manager. Mr. Duvall has been connected with the Continental for four years and is well known among the supply men.

* * *

H. C. George, petroleum engineer of the department of the Interior, has resigned as head of the Ardmore, Okla., field office of the Bureau of Mines, to accept a position as director of petroleum engineering at the University of Oklahoma. Frank M. Brewster, formerly assistant deputy supervisor at the Taft, Cal., office of the Bureau of Mines, will succeed Mr. George in the southern Oklahoma office.

E. W. Hughes of Rawlins, Wyo., organizer of the Hughes Oil Company, which brought in the largest well in the Lost Soldier Field, was a Casper, Wyo., visitor last week on business connected with his new company, the Hughes Royalty Company.

* * *

J. Elmer Thomas, for the past five years chief geologist of the Shaffer Oil & Refining Company, has resigned to organize a company of his own. Following the American Petroleum Institute meeting in Fort Worth, which he attended, Mr. Thomas planned to go to Chicago where his headquarters will be maintained.

* * *

W. M. Welch, formerly vice president and general manager of the Tidal Refining Company, and J. H. Welch, also a former Tidal man, are now engaged in consulting work on natural gasoline manufacture. They will open offices January 1 at 502 Cosden Building, Tulsa. They will also engage in a general marketing business.

* * *

John L. Gray, vice president and general manager of the Shaffer Oil & Refining Company; W. R. Francisco, treasurer; O. O. Kerr, general auditor, and J. C. Kennedy, manager of the pipe line department of the same concern, have moved to Tulsa as a result of changing the company's headquarters from Chicago to the oil capital.

* * *

Thomas Fleming, Jr., a vice president of the Oil Well Supply Company, with headquarters in Pittsburgh, Pa., spent a few days in Tampico, Mex., recently visiting A. F. Milan, manager in Mexico of the Oil Well's subsidiaries in that republic. From Tampico, Mr. Fleming went to Mexico City. This is his first visit to Mexico.

* * *

B. G. Dawes, chairman of the board of the Pure Oil Company; R. W. McIlvain, vice president of the company, and J. L. Rodgers will sail from New York on January 3 for Venezuela to examine the company's holdings there and to study conditions with a view of estimating the probable future importance of Venezuelan oil.

* * *

George O'Leary, formerly field salesman for the Continental Supply Company at Corsicana, Tex., is now serving the firm as assistant district manager in the North Texas Field, with headquarters at Wichita Falls. Mr. O'Leary was connected with the Lucey Manufacturing Company before joining the Continental forces last year.

* * *

Forrest M. Towl of New York, president of the Southern Group of Pipe Lines, and V. S. Swisher of Oil City, Pa., attended a directors' meeting of the Southwest Pennsylvania Pipe Line Company at Pittsburgh last week, at which time a quarterly dividend of $1 a share was declared. This was $1 less than the previous declaration.

* * *

Col. Howard B. Oursler, superintendent of warehouses of the Marland Refining Company, is one of five officers of the Reserve Corps selected from the 90,000 members of the corps to take a special course under the Army War College at Washington. He will report at Washington December 31 and start the course January 2, continuing until February 1. The course will consist of informative studies on duties and functions of G-4 in the War Department, the system of procurement and distribution of supplies, troop and supply movements.

* * *

P. C. Crenshaw, founder of the Home Oil Company, and its president up to the early part of this year when he disposed of his holdings to the other interests, sailed for a trip around the world on Friday, December 5. He was one of the number of those on the steamship Belgenland which will make a trip around the world, returning some time in April. Mr. Crenshaw arranged with the officers of the steamship company to take his high powered radio set with him and expects to be able to keep in touch with affairs in America most of the time. The Byllesby interests, which control the Home Oil Company, as well as the Shaffer Oil & Refining Company, plan to merge the Home Oil Company, the Deep Rock Petroleum Company and all distributing subsidiaries into one large distributing company, it is understood, although official announcement is lacking.

THE
"OILWELL"
IMPERIAL ROTARY
STRIKES GUSHER
OF POPULARITY

THE "OILWELL" IMPERIAL ROTARY AT TULSA EXPOSITION

OIL WELL SUPPLY CO.

OLDEST AND LARGEST MANUFACTURERS OF
OIL FIELD EQUIPMENT

PITTSBURGH

LONDON NEW YORK TAMPICO

EQUIPMENT AND SUPPLIES

TEMPERATURE PROBLEMS IN REFINING INDUSTRY

Cracking has practically revolutionized the oil industry, and, according to a booklet on pyrometers just published by the Brown Instrument Co. of Philadelphia, Pa., the cracking of different grades of crude offers exacting temperature problems within the limits of a few degrees—problems that were unheard of a few years ago and which must sometimes be solved almost over night. The Brown Instrument Co. manufactures in addition to pyrometers, indicating and recording thermometers, tachometers, draft gauges, pressure gauges and other precision instruments.

"The electric pyrometer is a fundamental part of every oil cracking process," the booklet states, "and by means of extremely close temperatures in the vapor lines held to the limits of a few degrees plus or minus, refineries are able to obtain accurate cuts and to insure a minimum of rerunning.

"Furnace temperatures are watched by the stillman and recorded in the pump house for the superintendent. This prevents overheating the tubes and establishes more uniform heating conditions of the oil.

"Not only in the vapor lines from the stills, but in the oil lines and refractionating towers, in the stacks and in every other critical point where it is essential for the superintendent as well as the operators to know the temperatures every minute of the day or night, Brown pyrometers more than meet the rigid demands for accuracy."

In addition to many photographs and complete descriptions of all Brown instruments and parts, the brochure contains a valuable set of tables on the melting points of chemical elements, the approximate temperatures by color, burning temperatures of material used in the ceramic industry, and conversion of Fahrenheit and centigrade scales.

Another catalog by the same company just off the press is entitled "Measuring CO_2 Electrically." The principle of operation of the electric CO_2 meter is explained in detail.

STEEL DERRICK COMMITTEE

Harry M. Runkle of the International Derrick & Equipment Co., was elected chairman and James A. Thomas of the Superior Tube Co., was elected secretary of the steel derrick manufacturers' committee at a meeting of the committee on the standardization of rigs and derricks of the American Petroleum Institute in Fort Worth, Tex., last week. The committee which Mr. Runkle heads will include a representative from each concern manufacturing steel derricks and will act in conjunction with the national committee and with division committees of the Institute.

USES JOURNAL CARTOON

The Bignall & Keeler Machine Works of the N. O. Nelson Manufacturing Co. of Edwardsville, Ill., thought so much of the cartoon of George L. Moorman which appeared in the first Petroleum Exposition number of The Oil and Gas Journal that it was reproduced on the front page of a small folder recently issued by the company. The folder shows pictures of the Peerless pipe threading machine, motor drive, the Landis die head and the Peerless sliding die head.

BUYS STEEL TANKER

The General Petroleum Corp. has announced the purchase of a steel tanker from the United States Shipping Board for $153,750 and the obligation of converting the ship to Diesel propulsion. The tanker, known as the "L-10," has a dead weight tonnage of 7,245 tons.

STEEL MILL OPERATIONS INCREASE; MORE DEMAND FOR TUBULAR GOODS

By B. E. V. Luty

PITTSBURGH, Pa., Dec. 15.—The rate of steel mill operation, as indicated by the monthly report of steel ingot production, increased by 8 per cent from October to November, the November rate being 71.6 per cent of estimated capacity. Operations were increasing during November, leaving the rate at the close of the month about 75 per cent, and this rate has since been maintained, the highest rate since last March.

Production of steel ingots in 1924 will be about 36,300,000 gross tons, which is 17 per cent below last year's production and 6 per cent above average production in the five years, 1919 to 1923, inclusive.

The various indices of industrial and commercial activity do not show a decrease of anything like 17 per cent from 1923 to 1924, as is shown in steel production. In some quarters it is insisted that while stocks of steel in the hands of buyers were small a year ago, lately they have been much smaller still, and the comparison just made tends to support this view.

With such very low stocks, and with buyers of bars, shapes, plates, sheets and wire products all confronted with the prospect of higher prices for the first quarter than were ruling at election time, the combination of circumstances would induce buyers to take hold with some freedom, making purchases for early deliveries. Mills that were advancing prices gave buyers an opportunity to place orders for shipment at mill convenience at the old prices.

This analysis tends to explain a point that has puzzled many observers, why the steel market should increase so in activity since the election, with heavier production and deliveries of steel, when there is little if any evidence of the actual rate of steel consumption increasing at this time. It is not the time of year for an increase.

Advanced prices have lately gotten into full force and effect in bars, shapes, plates and wire products. In sheets there are many mills still selling at old prices, the policy being to accumulate a good backlog of business before advancing. In the lines that have completed advances the mills already had good backlogs. Not a great deal of business is going at the advanced prices, but there is enough to show that the prices are actually held. The total turnover in steel products has probably diminished somewhat in the past fortnight and it is likely to grow lighter in the next two or three weeks. After the turn of the year a fresh increase is expected.

Tubular goods present a case of their own, for two reasons. In the first place there was no point about prices, as prices had not declined from the last top, reached in April of last year, as they did in so many lines. In the second place, there is an increase in drilling, or actual consumption of oil country goods, in several fields. The pipe mills do not claim that there is a large increase in demand for oil country goods in the past four to six weeks, but they do assert that there is some, and naturally consider this very significant, coming at a time of year when normally there would be a decrease.

Pipe mills are estimated to be operating at between 75 and 80 per cent, comparing with a low point of around 60 per cent some three months ago. There is practically full operation in butt weld departments, making merchant pipe chiefly. The pipe mills expect a very heavy business in 1925 in casing, tubing and other oil well supplies. As to line pipe, there does not seem to be any basis for definite prognostication.

Forging billets are firm at $41.50, Pittsburgh, with small billets, soft steel for blacksmith and other work firm at $37; plates, 1.90c per pound; bars and shapes, 2.10c; black sheets, 3.50c; nails, $2.85 per keg, base; tin plate, $5.50 for 100-pound cokes; merchant pipe, 62 per cent basing discount, all f.o.b. mill, Pittsburgh district.

BETTER LUBRICATION MEASURE OF ECONOMY

Every year the size of the units employed in industry increases, according to a booklet entitled "The Economy of Better Lubrication," issued by the McCord Radiator & Manufacturing Co. This is true whether these units be regarded as entire plants, as departments in a plant, as individual machines for producing marketable goods or as prime movers and their auxiliaries and accessory equipment.

As a consequence of this rapid increase in the size of the unit as well as the increasing interdependence, it follows that every time the operation of a unit is impeded or suspended because of inefficient lubrication, that the actual cost of the slowing up or shutdown tends to become more costly.

This means that whereas efficient lubrication has heretofore been highly desirable, it is fast becoming a downright necessity.

A few years ago it was not relatively an important matter for a machine costing $200 or $300 to be shut down for repairs. Today this small machine is a thing of the past; the cost of even minor units of machinery and equipment runs into thousands of dollars apiece.

Moreover, there must now be taken into account the cost of lubrication under modern conditions. It is not only easy but usually necessary to spend thousands of dollars a year for lubricants in even the small plant. If this lubricant is not properly distributed to the machines, it is usually possible to waste half of it, thus doubling the cost.

While the booklet mentioned above deals in detail with the Class "B" lubricator made by the company, the following advantages are declared to be common to all types of McCord force feed lubricators.

1. Automatic: All friction surfaces supplied continuously with clean oil in just the right place and quantity regardless of the degree of attention accorded the lubricating system by the operators. The oil flow of oil is automatically started or stopped with the starting or stopping of the machine. Moreover, the amount of oil fed is increased or decreased in proportion to the speed of the machine.

2. Reduces Plant Upkeep Costs: Keeps expensive machines in continuous operation, preventing slowing up or shutting down of operations, due to necessity of repairing machines because of inefficient lubrication.

3. Materially Reduces Quantities of Oil Required: Every drop of oil is made to do full duty. It is unnecessary to supply greatly excessive quentities as when inefficient lubricating methods or mechanisms are used.

4. Reduces Cost of Attendance: The use of these lubricators frequently makes it possible to do away with the services of one or more oilers.

5. Better Safety for Attendants: Many serious injuries and fatal accidents to oilers are prevented since it is not necessary for these attendants to climb up over the machines where these lubricators are used.

6. Fire Hazard Decreased: Cleanliness of operation is a mark of one of these installations. The spilling and splashing of oil in many places which creates a serious fire hazard is entirely eliminated.

7. Better Machine Operation: Bearings can be run looser when these lubricators are used. This means that shock and vibration are materially lessened with a consequent reduction in friction loss, with increased life to the machine and better all-around service.

8. Longer Life of Cylinder Walls and Pistons: It is a mighty expensive proposition to repair a cylinder and fit new rings. McCord force feed lubricators, by doing an efficient, practical job of lubrication, greatly increase the service life of cylinder walls and pistons.

9. Longer Life of Bearings: Proper application of the lubricant by these lubricators washes out any foreign matter. It also reduces materially the wear on the bearings, as an adequate film of oil is provided and overheating prevented.

INTERESTING EXHIBIT AT POWER EXPOSITION

The Hill Clutch Machine & Foundry Co. of Cleveland, Ohio, has an interesting exhibit at the third National Exposition of Power and Mechanical Engineering held in New York City at the Grand Central Palace recently. A. L. Whiteside, sales engineer of the New York office, was in charge.

The principal products featured were "Smith Type" Hill friction clutches; "Cleveland Type" collar oiling bearings; "Industrial Type" spur gear speed transformers, and "Steelarm" automatic belt tighteners. For nearly half a century this company's product has been used in practically every industry where power transmission is required. The company will be glad to mail literature to anyone interested in its equipment.

TRANSMISSION MACHINERY

Two new catalogs have just been published by the W. A. Jones Foundry & Machine Co., of Chicago, manufacturers of transmission machinery and appliances. Catalog No. 31, entitled "Jones Power Transmission Machinery" contains the latest data concerning all kinds of transmission appliances including shaft hangers, pillow blocks, couplings, collars, belt tighteners, mule stands, bench legs, etc. Catalog No. 32 covers "Jones Sprocket Wheels and Chain Belting." Complete specifications as well as price lists and illustrations are given.

UNION TOOL BOOKLET

The Union Tool Co. has recently published a very interesting booklet, on "Development of the Oil Well," by Edward Timbs, district engineer. It gives in detail the various operations necessary for the development of a well, a description of the many types of machinery and equipment necessary, the troubles apt to hinder successful operation and many illustrations. The booklet has been published under the supervision of Robert R. Berry, who edits "The Ideal," the house organ of the Union Tool Co.

INTRODUCING SAFETY SWAB

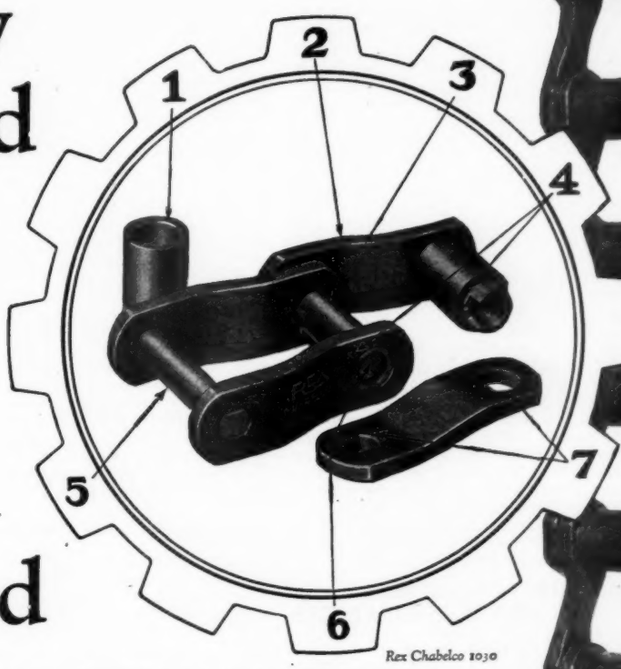
The Shaffer Brothers Specialty Co. reports meeting with considerable success in the introduction of the Leidecker safety swab. The novel features of this swab are its ability to operate without loss in a tube in which the sections are not of uniform diameter, by means of a collar expanded by the weight of the liquid, and an automatic release valve which can be set to raise only a certain weight of liquid before an excess is left, the idea being to reduce undue strains. In a recent test, the rubber was examined after it had been used on 370 runs, and reported found to be in practically as good condition as at the start.

PITCH

Accurately Maintained

7

Times Guaranteed



Rex Chabelco 1030

1 Sprocket fit is maintained by rollers that resist wear.

2 Offset in sidebars will not straighten out and thus destroy pitch.

3 The bushing is unusually durable—no slack will develop there.

4 No play can develop where bushing meets the sidebars.

5 No bent pins to destroy pitch, no brittle pins to snap.

6 Case-hardened pin bearing on case-hardened bushing—no wear in sidebar holes—no change in pitch.

7 Sidebar holes are multiple punched, further assuring pitch accuracy.

ROLLERS are of special analysis steel correctly heat-treated to give maximum strength and toughness and better wearing qualities.

Sidebars are made from open-hearth steel with high carbon content to insure greater strength.

Bushing is case-hardened to give exceptionally hard-wearing surface without affecting the shock-resisting toughness of the interior of the metal.

Rex Chabelco bushings are forced into sidebars and securely locked, thus preventing them from wearing into the sidebar and destroying pitch.

Pins are rolled smooth after forging and then case-hardened and heat-treated to withstand pounding, high-speed operation. The ends are sheared to lock in the sidebars and prevent turning.

Pin has swell under head which is forced into sidebar, thus locking it at both ends and forcing all pin wear to occur in the bushing instead of in the sidebar. This gives greater bearing area and brings together two case-hardened wearing surfaces.

On all drive chains both holes in sidebar are punched simultaneously by a multiple punch, assuring accuracy of pitch and bearing, very important for good chain service.

REX CHABELCO

CHAIN BELT COMPANY, *Milwaukee, Wis.*

The vertical strand of chain is Rex Chabelco 1240, developed by the Chain Belt Company for the highly destructive service of the Oil Fields.

It was the first oil well chain to have the notched-out feature since adopted by practically the entire industry.

It is stocked by most Oil Field Supply Dealers, and can also be identified by the word REX on every sidebar.

The Chain Belt No. 210 Catalog and Engineering Data Book shown above consists of 512 pages. It lists in detail all information for the ordering and use of Rex Chain, Conveyors and Transmission Machinery.

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Dept. 12-OG

Please send me a sample of Rex Chabelco Chain.

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NATURAL GAS DEVELOPMENTS

NATURAL GAS AND OIL INDUSTRY NEED MORE GOVERNMENT RESEARCH

By Charles E. Kern

WASHINGTON, D. C., Dec. 15.—While the oil and natural gas industry is alive to many of the problems that present themselves to the producer, refiner and distributor, there appears to be but little interest in promoting scientific investigation and experiment of a kind acknowledged to be beyond the reach of private companies or individuals and for which the Government alone has most ample facilities and by which the attendant expense should be borne.

Helium would be unknown today had not scientific skill and financial support been provided by governments for the promotion of each step that has been made in the advance of that knowledge by which an entirely new industry has been created with promise of rich reward for the producers and distributors of natural gas. This outstanding illustration of the value of scientific research is sufficient to point the way to a useful government activity for which there can be no manner of criticism. It could be emphasized by the narration of scores of more or less similar instances by which government enterprise in the realm of science has not only promoted industry and commerce but has rebounded to the benefit of the people at large. Such activity is one of the few means by which the government can interpose its influence on the business world without adverse criticism. That is so because it is almost the only means for carrying on such enterprise, because the discoveries it makes are not likely to reward the investigator as they are often so remote in respect to immediate commercial profit as to give no encouragement.

Present Day Problems

In the drilling and production of oil there are many present day problems that baffle the geologist and engineer. One of these problems is the effect of vacuum on the production of oil and gas. Conditions are vastly different in different localities. It would be highly beneficial if the producer could know in advance of his operation the factors that control the results. He would know in advance in reasonable certainty whether it would pay him to install the vacuum element in his operation. In some places the expense of putting the vacuum on is amply repaid by results while in other places such a process is a dead loss. It all depends upon the type of sand being dealt with and the other conditions relating to porosity and freedom of the passage of fluids.

The problem of knowing when the vacuum should be put on is one that petroleum geologists and technologists believe is susceptible of demonstration. To obtain absolute knowledge on this important question it is necessary to conduct a long line of careful experiments which would not pay the individual producer because the benefit to his production would be trifling compared with the benefit derived by the entire oil field in which he operates. Indeed the knowledge so gained would benefit the industry of the entire country.

Another important subject about which little is known is the recovery of oil from old sands. Petroleum geologists believe that anywhere from 50 to 80 per cent of the original oil has been left in the sand in fields that are regarded as having been exhusted. An enormous amount of research and experiment should be conducted along that line. Then, too, very little is known about the mining of oil from asphaltic beds. A good deal of work of this kind has been done in Alsace, but there the work has been conducted under such different conditions that their experience does not greatly assist engineers in this country. When they strike deep water before they get oil they quit and go somewhere else. As a rule in the United States water is found above the oil sands so that the same practice would not be followed.

Recovery of Gas

Another important production problem relates to the better utilization of natural gas which is mixed with oil in some sands and its economical use is important in order that the amount of gas used to elevate each barrel of oil shall be as litte as possible. Of course the mount of gas with oil is limited and a well will flow more oil than it will pump and the flowing well can be encouraged by a careful conservation of the gas. If that gas can be conserved the flow life of the well will be prolonged and thus there will be a reduction in the ultimate cost of recovery and an increase in the amount of oil recovered.

These scientific investigators understand very well that they work under limitations in that in this sort of investigation they must keep in mind it is the industry that is to be served and therefore they cannot be too harsh on the operator whose aim is for the quick recovery of oil. If the waste is absolutely stopped he may be forced to stop taking out the oil

(Continued on Page 164)

CITY OF LONG BEACH HAS MUNICIPAL GAS

By H. W. Burkhart

Chief Engineer & Superintendent Gas Department, City of Long Beach

The city of Long Beach, Cal., in 1911 acquired a water system from private interests and included in the property transferred to the city were certain waterbearing lands and sites for reservoirs. In June, 1921, an oil well was brought in across the street from one piece of the city property. A few months later the city entered into contracts for the development of 37 acres for oil and gas and in 1922 another contract was entered into for the development of 140 acres of city land. A number of oil wells were brought in on city lands and produced large quantities of natural gas. These leases provided that the city receive forty per cent of the oil and gas produced.

The city authorities, not wishing to enter into the gas business in competition with the existing gas company, entered into a contract with the company to sell gas received from city lands at 8 cents per 1000 cubic feet. At that time the gas company was charging at the rate of $1 per 1.000 cubic feet for domestic consumption. The expectation of the people of Long Beach that this low rate of 8 cents by the city to the gas company would be followed by a substantial reduction in rates by the gas company was not realized, and after several unsuccessful efforts to obtain a satisfactory reduction in rates, a bond issue of $3,000,000 was voted August 14, 1923, for the purpose of acquiring a gas system.

The city engaged engineers who made an appraisal of the property of the gas company to determine its value to the city should an agreement to purchase be arrived at. The company was asked to name a price for its property and after some delay gave the city a price of $4,-500,000. This price being more than twice the appraised value, the city council decided, upon the advice of the city manager, not to undertake the long and uncertain process of condemnation but to enter at once upon the construction of a modern gas system.

Work was started in November, 1923, and by March, 1924, the city had piped gas from city lands to the central business district and was selling gas at 50 cents per 1,000 cubic feet. The gas company, realizing that in a short time the city would have all the gas business, negotiations were again opened and finally an agreement was arrived at whereby the city acquired the property for $2,225,-000. The city has already spent $300,000.

The rates established by the city are 50 cents per 1,000 cubic feet for domestic consumers and as low as 15 cents per 1,000 cubic feet for large industrial consumers.

Under private ownership in June, 1923, the number of consumers was 27,087 and the gas sold was 385,000,000 cubic feet. Under city ownership in June, 1924, the number of consumers was 32,206 and the gas sold was 742,000,000 cubic feet. This shows an increase of almost 100 per cent in the amount of gas sold.

The gas department of the city is contracting for additional supplies of gas not only from land adjacent to the city-owned wells but also from other fields. There will be available within the next year 50,000,000 cubic feet of gas per day.

The gross revenue of the gas department will exceed $200,000 per month by the first of the year and it is expected that $500,000 will be expended from revenues from the sale of gas for new mains, service connections and other improvements.

ELK COUNTY GASSER

A seven and one-half million cubic feet gas well was drilled in on leases in Elk County, held by the Ball estate of Coffeyville, Kans. The well is located in 22-29-9. and an offset will be drilled at once.

HEARING AT PITTSBURGH ON GAS RATE PROTEST

PITTSBURGH, Pa., Dec. 15.—The hearing before the Public Service Commission of the increased gas rate case, in which the city of Pittsburgh and a number of municipalities oppose the increase from 50 to 60 cents a thousand, adjourned after two short sessions to January 7. The Equitable Gas Co., the Allegheny Heating Co., and the Monongahela Gas Co., subsidiaries of the Philadelphia Co., the Peoples Natural Gas Co. and the Manufacturers Light & Heat Co., and others are under fire.

The hearing was held before Chairman W. D. Ainey, Commissioner John P. Conley of New York, and Frank E. Hunter, general counsel. The first case was that of Pittsburgh against the Equitable Gas Co. C. S. Mitchell, controller of the Equitable Gas Co., was questioned by A. W. Robertson, vice president and counsel of the Philadelphia Co., and Special City Counsel C. K. Robinson representing Pittsburgh. It was brought out that the Equitable Gas Co. secured its supply from the Pittsburgh & West Virginia Gas Co. in West Virginia, a subsidiary of the Philadelphia Co.

One reason given for the advanced rate to 60 cents was that the gas fields are being exhausted. Alfred Hulburt, vice president and general manager of the Equitable Gas Co., presented figures to show the gas production had fallen off 70 per cent in nine years, or from an annual production of 52,685,054,000 feet in 1915 to 16,150,000,000 feet, estimated production for this year.

SUGGESTED METHODS FOR ESTIMATING RESIDUE SUPPLIES OF GAS AND OIL

By Col. R. B. Harkness

Natural Gas Commissioner for Ontario Paper read at Sixth Annual Convention of Natural Gas and Petroleum Association of Canada at Hamilton, Ont.

There is one item of importance to the oil or gas man when he has discovered either of these products, viz., how much is there, and how long will it last? Most of his problems hinge on the answer to these questions: Can he contract with a city or town to supply their needs? Does the amount of gas or oil justify the laying of a pipe line to a point where it can be disposed of, and a dozen other questions bearing on these two that affect all branches from the president who wishes to know the present worth of his gas or oil field to the accounting staff who set up depletion and amortization reserves. The answer cannot be got definitely but the experiences of other fields are obtainable and may be used as a basis or a guide in making such an estimate.

The United States Geological Survey has published decline curves from which can be estimated the recoverable supply of gas or oil for most fields in the U. S. A., and we have records of our Canadian wells both in limestone and sandstone fields from which these curves can be constructed. No two fields give exactly the same result but the open flow and decline in dry sandstone fields are like dry limestone fields, only varying with the coarseness and thickness of the sands and the degree of cementation. There is a wider variation in the decline of wet limestone fields. However, an approximate estimate of the life of a well or field can be got by carefully comparing the open flow and rock pressure with the decline curves of similar fields. As I said, these records are available for both Canada and the U. S. A. The U. S. Inland Revenue Department uses this principle to set up depletion reserves. It is termed "the law of equal expectation."

It is most important that wet fields and dry fields be treated separately as the decline curves and recoverable volume are totally different. In the totally dry fields, annual conditions being equal, the annual decline in production will be found to be more regular than in the wet fields where the decline will be more rapid at first and less rapid in the latter half of the life of the well or field.

The production open flow and rock pressure of dry fields, more than wet fields conforms most to Boyle's law, the law that has been used for so many years for estimating the quantity of gas underground. Conditions in dry fields more nearly approach the condition under which Boyle made his experiment. In wet fields the open flow and production fall off more rapidly than rock pressure. If the pressure curve and production curve are plotted separately and compared with the pressure volume curve (Boyle's law), the difference will be noticeable at once. A wet field or well may have only a spray of water or may require the services of a pump 24 hours daily. In either case, so far as I know, the production or open flow and rock pressure bear the same relation to one another.

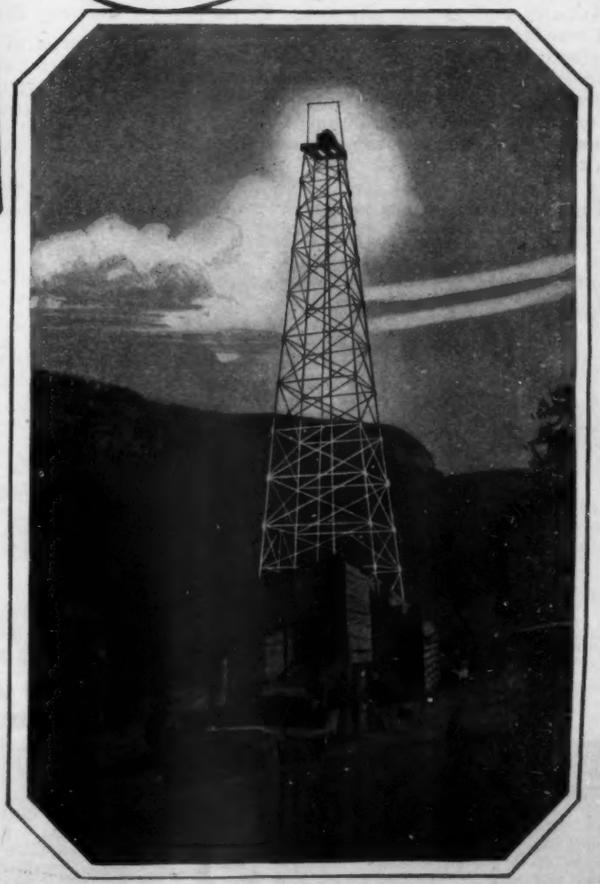
There is still another class of field where the decline in production differs; these, however, are oil fields only where the pressure is from a column of water and not as in the foregoing, from the expansion of compressed gases. Here the rate of oil production does not diminish until water appears in the well, for example, a well producing 30,000 bbls. of oil daily would maintain that production until the oil disappeared and it flowed 30,000 barrels of water. In such a case, I know of no way to gauge accurately the ultimate production of a well except to

(Continued on Page 148)

View No. 1 (extreme left) Foundation members being assembled.

Erecting the First American Derrick in France

View No. 2 (above) Shows methods used in erection, making a tripod of the lower braces for hoisting and putting the heavy 27-lb. leg sections in place. Native labor used.



No. 3 (above) Oh, joy! French engineering staff sent to witness erection of rig, giving champagne party for the American crew. Right to left: Frank Bushaw, driller; George McClain, driller; Thomas Bannon, superintendent. Mr. Bannon says: "For deep foreign wildcat work, I consider the Moore derrick unequaled on account of its great strength and proven safety in every emergency."

LEE C. MOORE & COMPANY, Inc., Pittsburgh, Pa.

ESTABLISHED 1907

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MOORE TUBULAR STEEL DERRICKS

Fire, Wind, Rot, Insects, Drilling Strains— do not disturb users of Moore Derricks

Several years ago, a few Moore derricks were ordered by the Argentine Government for use in the famous Comodoro Rivadavia Field, washed by the waves of the South Atlantic, and periodically swept by its gales. These few first derricks seemed to prove satisfactory, for presently more derricks were ordered. Again the experience with Moore derricks must have been entirely successful, for many additional shipments have since been made, often a dozen or more derricks at a time.

In oil fields the world over, derricks of many different styles and types are used. But the Moore derrick is found in practically all of them, outnumbering all other derricks many times. It is more nearly a Universal Derrick than any derrick yet designed.

A corps of expert derrick engineers stand ready to co-operate in the adaptation of the Moore derrick to the needs and requirements of every field, every service. This service is free to all operators and no obligation is incurred.

Write us today about your requirements. Catalog Free.

One of the many Moore [illegible] the Comodoro Rivadavia [illegible] connection with Star Drilling [illegible]

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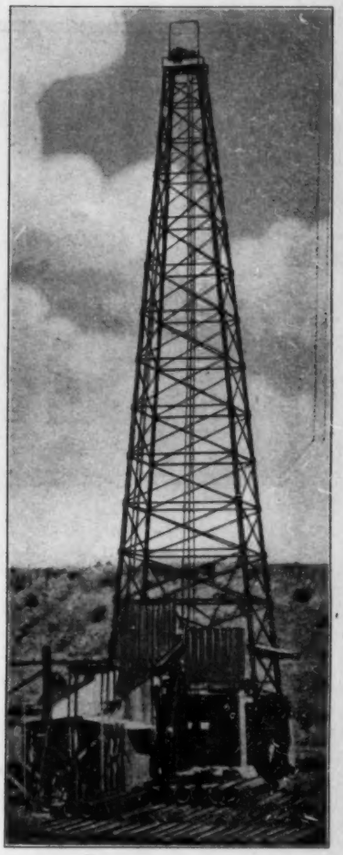
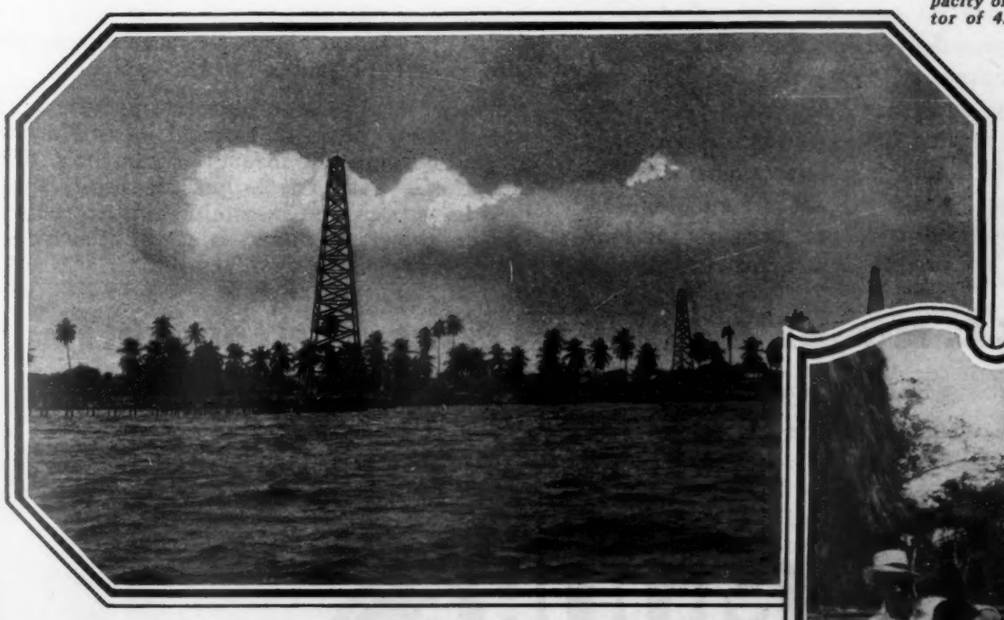
MOORE TUBULAR STEEL DERRICKS

Above — Partial view of Comodoro Rivadavia, Argentine Field, in which over one hundred Moore pumpers and drillers are used.



Above—105-Foot Moore Combination Derrick in Punjab, India. Legs 4" 27-lb. pipe, fitted with 4" 27-lb. reinforcing legs. Probably world's strongest derrick, having safe capacity of 650,000 lbs. with safety factor of 4.



Moore drilling derricks in La Rosa Field, on Lake Maracaibo, Venezuela. Well on left making 4500 barrels.

Another kind of "petting party." Mr. C. W. Hamilton, well known American oil man, in intimate conversation with one of his Venezuelan friends. (We are sure the Madam will not object.)

Standard Oil Co. of Venezuela, Monal No. 1 Well, June, 1924. Moore 91-foot Combination Drilling Derrick.

Confidence has Replaced Prejudice

Little more than a decade ago, steel derricks were everywhere looked at with prejudice and suspicion. Today, over 25,000 Moore Tubular Derricks in actual service, have by their superior performance established the large economic value of the tubular steel structure. Moore tubular derricks have saved the petroleum industry millions of dollars by converting a structure of strictly limited life and strength, into a permanent structure of almost unlimited life and strength.

Nowhere has the Moore derrick proven more advantageous than in tropical countries where storms, climate, and insects play havoc with wood structures. And the largest operators in every field have been first in establishing to their satisfaction, the strength and safety of Moore derricks under every condition of service.

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MOORE TUBULAR STEEL DERRICKS

Oil as a World Industry

Reconstruction in Europe, Following Adoption of Dawes Reparations Plan, Ushers in Era of Unprecedented Prosperity and Will Intensify International Competition in the Production and Use of Petroleum Products, Vitally Affecting the Industry in America

By W. T. Anderson

Progress today is measured by the use of oil. Nations lead or lag according to their utilization of the products of petroleum.

Use of Oil Measures Progress

The United States, fortunate in production, has led in consumption because of accessibility and abundance of supply and because of a population prosperous enough to have the means of employing it. Fortunate, too, because when oil for power ushered in a new era, this country, alone, was ready to seize the opportunity and has been able to keep pace with its expansion without interruption.

The world at large was just beginning to realize the possibilities of the internal combustion engine, the automobile and the truck were only becoming recognized as capable of general utility rather than as the carriage of the wealthy or the conveyance of great corporations, when Europe was plunged into war.

* * * *

The unprecedented activity imposed upon America by wartime demands immensely hastened the motorization of the United States by supplying both the need and the means. The increasing of the capacity of our industrial plant and the speeding up of processes vastly enlarged our mechanical equipment calling for an unparalleled supply of oil products.

America Ready For Opportunity

Our own entrance into the war multiplied this manifold so that since the close of the conflict our industrial productiveness and efficiency in transportation, giving us an enormous advantage, have been the wonder of the world.

* * * *

Meanwhile Europe has suffered 10 years of stagnation. Four years of war were followed by 6 years of chaos. The formerly most powerful nations of the continent have been collapsing into bankruptcy before our eyes. Unbalanced budgets, currencies depreciating to worthlessness, industry and trade reduced to the bare necessities of living, millions unemployed and underfed, while politicians fanned the flames of hate and immeasurably aggravated the woes of the peoples by military menaces and movements, cordons and obstructions, plots and counterplots, seemed hurrying all Europe over the abyss.

Europe Out of Race 10 Years

Sheer necessity at last forced the leaders of Europe, trembling on the brink, to listen to reason. Incapable, because of the labyrinth in which they had lost themselves, to find their way out, they accepted the guidance of the Dawes commission and the proffered assistance of America to escape utter ruin.

* * * *

The riddle of reparations which had defied the solution of embittered statesmanship, blighting with its uncertainty every attempt to calculate the future, yielded to treatment as an economic problem where all political prescriptions had failed.

Solved Riddle Of Reparations

So, today, after 10 years of wandering in the wilderness, Europe is back on the highway. All the world sighs with relief. At last we know where we are heading. We can figure on the future with relatively fixed factors instead of being baffled by fears and phantoms.

* * * *

The task before Europe is to make good the 10 years lost, the destruction wrought and the progress untaken. Vanishing currencies must be replaced by sound tokens, shrunken values restored. Idle wheels must be set turning at accelerated pace; industries rebuilt and trade recovered.

Must Make Good Ten Lost Years

While America has been forging ahead Europe has been not only stationary but dropping back. Foreign trade has been lost, yet it is from the markets of the world that these nations must win the means for reconstruction.

* * * *

To compete on even terms they must bring their industrial efficiency abreast of the improvements attained in America. Mere cheap labor will not help them enough. They must acquire and apply the mechanical efficiency gained to the world by American enterprise during the 10 years when they were drifting rudderless.

Must Match Mechanical Efficiency

The distinctive feature of industrial progress in those 10 years has been, in America, the mechanizing of industry and the motorizing of transport through the use of oil for

power—a process contemporaneous with the disabling of Europe.

The task of reconstruction abroad demands the use of every means of speeding up production and transportation so signally employed in the United States. They must mechanically multiply their output and increase the mobility of their workers. The oil engine and the motor vehicle are essential factors in any scheme for Europe's restoration if it is attempted to keep up with American progress.

* * * *

Prosperity From Reconstruction

Stocks are low in Europe and wants are many since for 10 years the people have been compelled to go without normal renewals. Whole nations that formerly prospered through mutual trade have been cut off from commerce. You cannot shut out a hundred million customers without disastrous effects. Every nation in Europe has suffered unemployment and business depression because its markets were disorganized.

The settlement of the reparations problem on a basis which promotes good faith and friendship, with assurance of stability, will open up the long closed paths of commerce in Europe and permit a return to normalcy. The reconstruction necessary in any one of the countries will furnish employment at top speed for years to come.

This program of reconstruction must take in not only the rebuilding of industrial plants destroyed during the war or allowed to fall into decay during the peacemaking, but the enlargement and modernization of others to meet the new needs. That employment of labor and capital will create an increasing demand for accommodation in housing, and the other necessities and wants of life.

* * * *

Orders Coming To America

Such a building program will require adequate means for transportation of material and with the resort to motor trucks improved roads will be needed. Better roads and the ability to buy, built on employment and a higher standard of living, will stimulate demand for motor cars just as here.

The financial assistance which America has already extended will be supplemented by orders placed in this country for material and equipment necessary to carry on the work, particularly in those lines in which Americans especially excel, the manufacture of automotive vehicles and trucks, and the supplying of petroleum products to run them.

Already our exports of gasoline have expanded to a quantity that this year materially modified our difficulties from overproduction. England, for example, imported in the first 10 months of 1924 as much as in the whole four years of 1910-13.

* * * *

Motorization Of Europe

France is already seeking to overtake England in the use of the motor vehicle. England has 642,000, France 448,000, while Germany, with a larger population and more predominantly industrial than its western neighbor, has but 152,000—less than in West Virginia alone.

Contrasted with the total for many of our States these figures are almost insignificant. Yet it is in these progressive nations that the demand for American efficiency will first come. With the restoration of stability there can be no doubt that Europe will struggle to resume its former standing in world trade. The turning toward oil for power in America will be duplicated there, opening an immense market for petroleum products.

* * * *

Europe Searching World for Oil

Europe indeed is already seeking to assure itself of a supply of oil by searching every continent. But it is wholly unprepared to meet any such demand as the reconstruction period it is now entering will require. Just as the United States furnished the world with kerosene and with the lamps to use it we shall be called upon to furnish the oil for power and the machines to use it.

We are a living demonstration of the advantages of oil using, as we have been the teachers of the world in oil production.

At this moment, on the eve of what promises to be the greatest era of industrial development in history, it is well to have a survey of the petroleum situation throughout the globe, present and potential production, possible sources, accessibility to transportation, probable trend of consumption, development of uses, and world trade currents in terms of oil.

* * * *

Effect of Exports Felt at Home

Here in the Mid-Continent we have seen the market for refined products rescued by orders for export. There is not an oil center in the United States where the effect of our exports is not reflected. How much more will it be the case when Europe puts forth every effort to regain its lost industrial position and its peoples regain and enlarge their buying power on the new after-war standard.

The oil man who desires to attain an intelligent and comprehensive understanding of his business must inform himself on a world basis because the oil industry is a world-wide industry. The development of the Mexican fields shook our entire petroleum structure. The potentialities of Venezuela are being carefully weighed. The possible effect of a merger of the Royal Dutch-Shell and the Anglo-Persion Oil companies into one world-encircling combination as competitors of American producers and refiners is not to be underestimated.

* * * *

Preparing for Markets Abroad

These great organizations do not expect to compete with us in the United States. Primarily their thought is of supplying the coming markets of the world as they foresee the other nations seeking to overtake us in the use of oil in industry and transportation.

In a world industry like wheat or oil the price is a world price, affecting the remotest farmer or the most isolated producer and refiner. Hence it is incumbent upon American oil men to appreciate the importance of the world outlook. For that reason as a timely service to the industry The Oil and Gas Journal has collected and presented the World Survey of Oil, to be found in the present edition.

World Oil Production and Markets

Consuming Within Nine Per Cent of As Much Petroleum As Is Produced Annually. Present Market Around a Billion Barrels a Year

By Charles E. Bowles

The world has been producing and consuming oil industrially for 67 years—and yet 9 per cent of all the oil produced in that time was produced in the year 1923.

Since Rumania began producing oil back in 1857 the oil fields of the world have produced a total of over 11,388,000,000.

If this oil were put into tank cars holding 10,000 gallons each, the "train" would be 350,000 miles long—long enough to reach 14 times around the world.

Of this vast amount of oil the United States produced 7,192,000,000 bbls., or 63 per cent. We have produced six times as much oil since the beginning of 1901 as we produced in the previous 42 years. In the 17 months from July 1, 1923, to November 30, 1924, we produced more oil in the United States than from 1859 to the end of the year 1900.

Mexico and the State of Oklahoma began producing oil about the same time—1901. In the intervening years, Mexico has produced slightly less than 1,100,000,000 bbls.—and Oklahoma just slightly less than 1,500,000,000 bbls.

Mexico's Producing Areas

There are two major oil producing areas in Mexico—the "heavy" oil fields in the Tampico, or Panuco River area and the "light" oil fields in the Tuxpam area, nearly all of which lies north of the Tuxpam River.

Mr. Doheny and his associates pioneered the development of the heavy oil fields of Mexico, the first fields to be developed. The oil is of fuel oil grade, ranging from 8 to 12 degrees Baume, with practically no gasoline content. In the early years of this field's development the industries of the world thought of fuel in terms of coal—and decidedly not in terms of fuel oil—hence one can readily understand some of the obstacles that confronted the opening of the Mexican oil fields. The problem was essentially one of finding a market for oil of that quality.

Table 2 visualizes the difference between the output of light and heavy oils from the two great producing areas of Mexico. The total production of the north area to the end of 1923 amounted to over 312,000,000 bbls., or 28.5 per cent of the total production.

The south fields, which reached their greatest development in 1921, had produced, to the end of 1923, slightly over 781,000,000 bbls., or 71.5 per cent of the total production.

About 60 miles southwest of Tuxpam is a small field—Furbero—which has produced a total of over 3,500,000 bbls. of oil, with a production of about 63,000 bbls. in 1923.

On the Isthmus of Tehuantepec a small production of 32 gravity oil with 20 per cent gasoline content was developed a number of years ago, the most important result from which has been to keep alive British interest in Mexican oil development.

The south fields are almost exclusively "light oil" fields, the oil ranging from 19 to 22 degrees, Baume, with from about 12 to 15 per cent gasoline content. The production from the two "heavy oil" fields—San Geronimo and Molino—is negligible, being about three-tenths of 1 per cent of the total from the south fields.

In the year 1923 the heavy oil fields in the Panuco (north) area produced 88,000,000 bbls., or 59 per cent of all the oil produced in Mexico during the year.

TABLE 1—World Production of Crude Oil, with Estimated Consumption in 1923

	Total Production to end of 1923		Production in 1923		Estimated consumption 1923	
North America—	Barrels	Per cent	Barrels	Per cent	Barrels	Per cent
United States	7,191,989,000	63.2	732,407,000	71.9	610,887,000	66.3
Mexico	1,061,784,000	9.3	149,585,000	14.7	11,300,000	1.1
Canada	25,400,000	.2	170,000	....	17,000,000	1.8
*West Indies	19,207,000	.2	3,051,000	.3	6,500,000	.8
Central America	.....	....	.....	....	350,000	....
Total	**8,298,380,000**	**72.9**	**885,213,000**	**86.9**	**646,037,000**	**70.0**
South America—						
Argentina	15,752,000	.1	3,400,000	.3	9,500,000	1.0
Colombia	747,000	....	424,000	....	†.....	....
Peru	44,509,000	.4	5,699,000	.6	†.....	....
Venezuela	9,028,000	.1	4,059,000	.4	420,000	....
Brazil	.....	....	.....	....	2,500,000	.3
Chile	.....	....	.....	....	5,150,000	.6
Other countries	.....	....	.....	....	2,680,000	.3
Total	**70,036,000**	**.6**	**13,582,000**	**1.3**	**20,250,000**	**2.2**
Europe—						
Russia	2,007,837,000	17.6	39,156,000	3.8	27,450,000	3.0
Rumania	194,539,000	1.7	10,867,000	1.1	6,600,000	.7
Poland (Galicia)	184,947,000	1.7	5,373,000	.5	2,500,000	.3
Germany	16,299,000	....	312,000	....	4,000,000	.4
France	2,341,000	....	403,000	....	11,430,000	1.2
Italy	1,141,000	.2	34,000	.1	4,150,000	.4
Czecho-Slovakia	405,000	....	74,000	....	2,500,000	.3
British Isles	10,000	....	1,000	....	35,400,000	3.9
Belgium	.....	....	.....	....	1,850,000	.2
Holland	.....	....	.....	....	4,350,000	.5
Spain	.....	....	.....	....	1,150,000	.1
Total	**2,407,519,000**	**21.2**	**56,220,000**	**5.5**	**101,380,000**	**11.0**
Asia—						
Dutch East Indies	273,555,000	2.4	19,868,000	2.0	6,150,000	.7
India (Burma)	149,044,000	1.3	8,320,000	.8	11,200,000	1.2
Persia	118,712,000	1.0	28,793,000	2.8	.....	....
Japan and Formosa	47,665,000	.4	1,789,000	.2	3,950,000	.4
Sarawak	12,342,000	.1	3,940,000	.4	.....	....
China	.....	....	.....	....	6,000,000	.7
Total	**601,318,000**	**5.2**	**62,710,000**	**6.2**	**27,300,000**	**3.0**
Africa—						
Egypt	10,636,000	.1	1,054,000	.1	2,250,000	.2
Algeria	59,000	....	9,000	....	.....	....
Union of South Africa	.....	....	.....	....	900,000	.1
Total	**69,695,000**	**.1**	**1,063,000**	**.1**	**3,150,000**	**.3**
Australasia—						
Australia	.....	....	.....	....	1,150,000	.1
New Zealand	.....	....	.....	....	600,000	.1
Miscellaneous	678,000	....	112,000	....	2,000,000	.2
Total	**678,000**	....	**112,000**	....	**3,750,000**	**.4**
Bunker Oil—						
At United States ports	.....	....	.....	....	37,500,000	4.1
At Mexican ports	.....	....	.....	....	6,950,000	.8
At Panama Canal	.....	....	.....	....	13,300,000	1.4
All other ports	.....	....	.....	....	62,500,000	6.8
Grand Total	**11,388,625,000**	**100.0**	**1,018,900,000**	**100.0**	**922,117,000**	**100.0**

*All production from island of Trinidad, most of consumption in Cuba. †Included with "other countries."

The light oil fields in the Tuxpam (south) area produced over 61,000,000 bbls., or 41 per cent of the total.

In the first three months of 1924 Mexico's total production was 38,554,000 bbls. Of this amount the heavy oil area produced 28,621,000 bbls., or over 74 per cent of the total, while the light oil area produced 9,933,000 bbls., or less than 26 per cent.

Light Fields Passing

Nothing could more forcibly emphasize the "passing," at least temporarily, of the light oil fields of Mexico than to tabulate these percentages for the above periods:

Oil	Total Production	During 1923	3 Mos. 1924
Heavy	28.5	59.0	74.0
Light	71.5	41.0	26.0
	100.0	100.0	100.0

In 23 years Mexico has produced slightly over 1,000,000,000 bbls. of oil. In the last five years she has produced slightly over 750,000,000 bbls., or 75 per cent of her oil in the last five years.

In the year 1923 three powerful groups of interests—Royal Dutch, Standard of New Jersey and Gulf Oil Corp.—through their subsidiaries, produced over 62 per cent of the heavy oil in Mexico. In 1923 these three groups, along with the Doheny group, produced over 66 per cent of the light oil in Mexico. In 1923 these four groups produced 64 per cent of all of the oil produced in Mexico. Of the total oil produced in 1923 the Doheny interests produced 22.3 per cent—the Royal Dutch interests, 20.5 per cent; the Standard of New Jersey, 16.0 per cent; and the Gulf Oil Corp. interests 5.3 per cent.

With the rapid intrusion of salt water into the south or light oil fields these percentages are shifting, and present indications are that the above four groups are now producing about 52 per cent of the total oil. Five other companies—International, Richmex, East Coast, Imperio, and New England Fuel—are producing, together, over 30 per cent of the total oil. In other words, nine large corporations, either directly or through their subsidiaries, are today producing almost 85 per cent of the oil in Mexico.

It is interesting to note that while in 1923 Mexico produced about 150,000,000 bbls. of crude oil she consumed only about 11,000,000 bbls. of petroleum products or about 8 per cent of her production, whereas the United States produced 732,000,000 bbls. and consumed 611,000,000 bbls., or over 83 per cent of the production.

Canada's Efforts

Oil has been known in Canada as long as in the United States—but Canada has produced only two-tenths of 1 per cent of the oil of the world. In 1923 she produced 170,000 bbls. and furnished a market for over 17,000,000 bbls. The population of Canada is slightly less than 9,000,000—of Mexico, over 16,000,000—yet Canada is absorbing 50 per cent more petroleum products than Mexico.

In the West Indies

The Island of Trinidad, just off the coast of Venezuela, and opposite the mouth of the Orinoco River, has produced a total of over 19,000,000 bbls. of oil. Of this amount 3,051,000 bbls. were produced in 1923. The estimated market of the West Indies—6,500,000 bbls.—is found principally in Cuba.

Central America

Small amounts of oil have been found in some of the Central American countries but the production to date is negligible,

although several of the large companies, especially Sinclair, are now actively exploring large areas. A powerful incentive for finding oil in some part of Central America is traceable to the strategic position of the Panama Canal in times of peace as well as war. Compared with tanker transportation, the advantages of local production and pipe line transportation into the bunkering stations are very obvious. The bunkering stations at the Panama Canal are especially important in view of the rapid change of the world's merchantships and battleships from coal burning to oil burning.

"National Oil Policy"

Taking North America as a whole, the continent has produced 73 per cent of the oil of the world. In 1923, it produced nearly 87 per cent of the world's oil—and consumed 70 per cent. What better argument for American oil men's combing the four corners of the world to assure a continuance of, and amicable control of this supply, than the fact that American industrial development is today furnishing a market for 70 per cent of the products from petroleum?

And what could be more patriotic than for our Government, whole-heartedly, to formulate and give substantial support to a "National Oil Policy" that will be as world-wide in our procuring of raw materials as, for 50 years, has been our distribution of finished products?

South America

The entire continent of South America has produced less than 1 per cent of the oil of the world. In 1923 it produced 1.3 per cent of the world's oil and consumed 2.2 per cent of the products from petroleum.

As a market for petroleum products North America is more than 30 times as large as the South American market. As a producer of crude oil, North America is more than 60 times as prolific as South America. At the present time the market of South America is about 50 per cent larger than the production of crude oil. While a part of the crude oil of South America comes to the United States to be refined, only a small part of the finished products used in South America are made by refineries located in South America.

Venezuela and Colombia are easily the most promising areas for large production in the near future and an increase in daily production of 20,000 bbls. would bring the output of crude oil up to the point where it would balance the market for finished products expressed in terms of barrels. With the positive knowledge that, from the oil sands of Venezuela, wells of 2,000 to 5,000 bbls. a day can be drilled, to say nothing of the La Rosa well that came in at 100,000 bbls. a day—leaves little room for uncertainty as to South America's shortly being able not only to supply her own needs, but to ship large quantities of crude to America and to Europe—just as Mexico has done for years.

The building of factories and the development of power-using industries has been a rather slow growth, even here in the United States—and there is every reason to believe that it will be very much slower in South America—and in Asia—and especially so in Africa. And it would seem almost a foregone conclusion that the foreign countries that will develop the oil fields in South America will follow about the same general policies that have been followed in developing oil in Mexico.

There seems to be more certainty that there is a great surplus of oil in South America, far beyond its own needs, than that it will not be produced at a rate that will be only an unfortunate repetition of the frenzied production in Mexico and in California. And if so produced, there can be no question as to its effect on the oil industry in the United States.

The market for oil in Europe in 1923 was twice as great as its production of crude. But if the Russian fields can be brought back to something like the production of 25 years ago, Europe will produce, within her own borders, the great bulk of the oil that she consumes.

To the end of 1923 Russia had produced slightly over 2,000,000,000 bbls. of oil, or over 17 per cent of the world's output. The United States, Mexico and Russia combined, have produced slightly over 90 per cent of the world's oil. In the years 1898-99-1900 and 1901 Russia produced over 50 per cent of the world's oil—in 1923 she produced less than 4 per cent. After almost 10 years of chaotic conditions in the oil situation in Russia, the sky seems to be clearing—and it is probable that Russia's oil output will grow as rapidly as the bettering conditions in the industry and finance make possible the expansion of the markets for oil in Europe. With the major war problems behind her, Europe will very probably supply a larger proportion of her oil needs from her own production, and controlled production abroad, than she has been able to do during recent years.

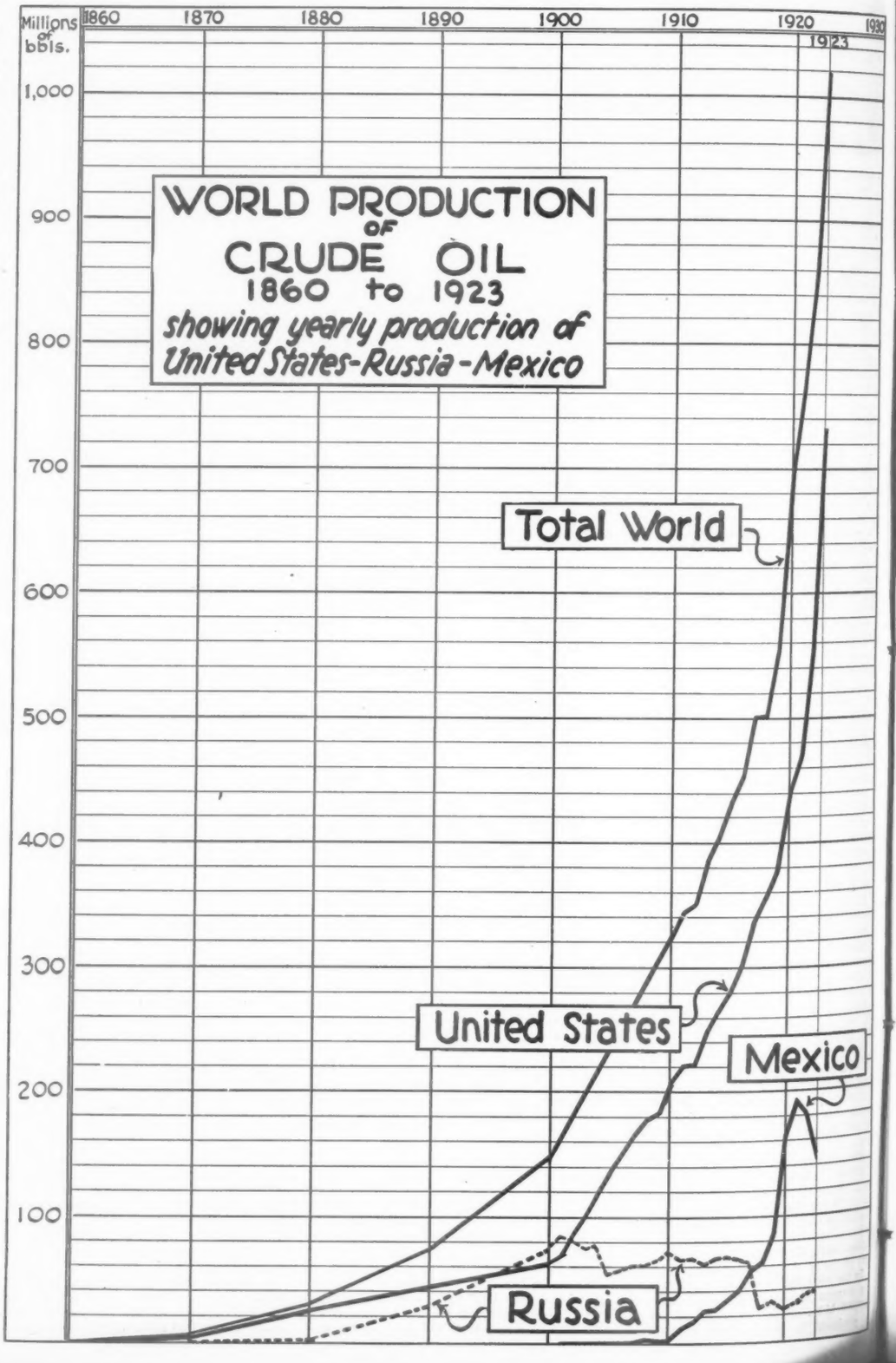
While England has produced only 10,000 bbls. of oil, within her own borders, her activities in oil reach around the world—Egypt, Persia, Burma, Sarawak, Venezuela, Mexico, the United States. And while, on what may be termed "British territory," only about 12,000,000 bbls. of oil were produced in 1923, this figure by no means represents the full measure of the active participation of British interests in the production of oil. In only two countries—Burma, (in India) and Sarawak (British Borneo)—is she producing oil in measurable quantities from her own lands. And yet, essentially British interests are producing an aggregate of millions of barrels a year in Persia, Venezuela, Mexico and the United States.

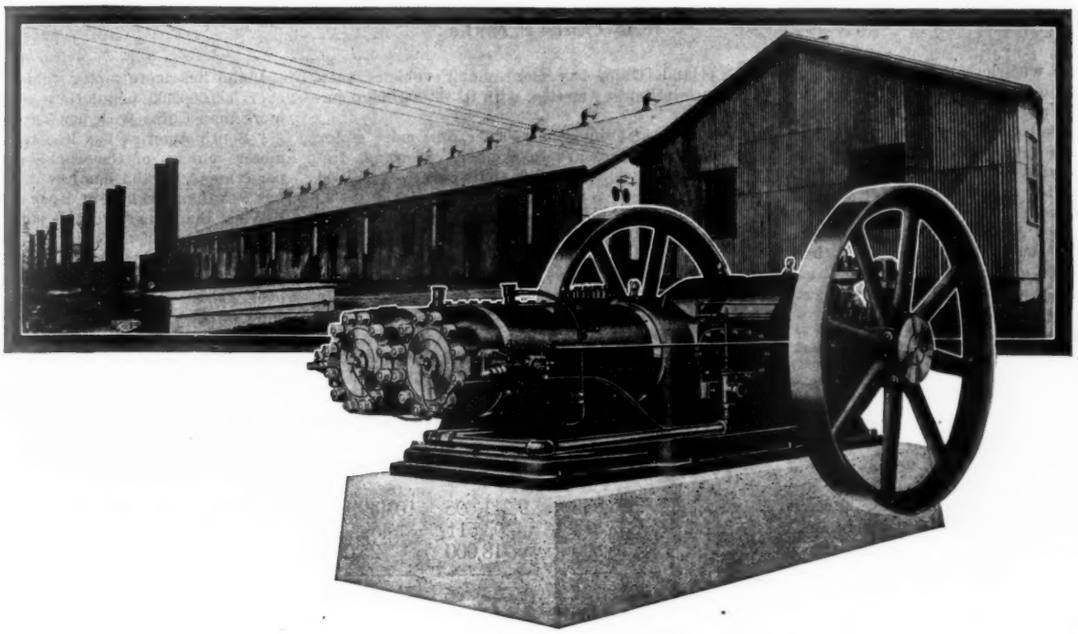
Rumania and Galicia

Rumania, which began producing oil two years before Drake drilled his well, produced, to the end of 1923, over 194,000,000 bbls. or 1.7 per cent of the world's output. In 1923 she produced 1 per cent of that year's production.

The Galician fields, now a part of Poland, have produced a total of over 184,000,000 bbls. of oil or 1.7 per cent of the world's output. In 1923 these

(Continued on Page 214)





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oil, or over 17 per cent of the world's out-

The Automobiles of the World

Distribution of Cars and Purchasing Power of the Nations Opportunity for Gasoline and Lubricant Sales Abroad

By Charles E. Bowles

The United States, with less than 7 per cent of the population of the world, has over 83 per cent of the motor vehicles.

Detroit County, Michigan, has only a few less motor vehicles than Mexico, Central America, the West Indies and South America, combined.

Los Angeles County, California, has more motor vehicles than there are in Asia, Africa, Australia and the islands of the sea, all combined.

Pennsylvania and Texas, together, have more motor vehicles than there are in all of the countries of Europe, combined.

Cleveland, Ohio, has more motor vehicles than there are in South America, with its 63,000,000 population.

The State of Illinois has 50 per cent more motor vehicles than there are in England, Scotland, Ireland and Wales, combined, with over 47,000,000 population.

Massachusetts has more motor vehicles than France, with 39,000,000 population.

West Virginia has more motor vehicles than Germany, with almost 60,000,000 population.

Rhode Island has more motor vehicles than Italy—Arizona has more than Denmark—Vermont has more than Sweden—Schenectady, New York, has more than Norway—New Hampshire has more than Belgium and Utah has more than Spain.

Idaho has more motor vehicles than India, with over 300,000,000 population—and Tulsa, Okla., has more than China with her 320,000,000 inhabitants.

South America has less than 1 per cent of the motor vehicles of the world—Asia has less than 1 per cent—Australia has less than 1 per cent—Africa has less than one-half of 1 per cent—the West Indies has less than one-third of 1 per cent—Central America less than one-thirtieth of 1 per cent.

Asia, Africa, Australia and the islands of the sea have almost 1,000,000,000 population—and slightly over 400,000 motor vehicles—less than there are in the State of New Jersey.

The countries included in the accompanying table account for over 99 per cent of the world's population—and all of its motor vehicles. And in check-

AUTOMOBILE REGISTRATION THROUGHOUT THE WORLD

Area and Country:	1919	1920	1921	1922	1923	Population	Pct. of Motor Vehicles
North America—							
United States and Alaska	7,558,848	9,211,695	10,449,120	12,239,651	15,092,902	105,765,000	
Canada and New Foundland	337,354	403,611	469,910	510,295	643,371	9,051,000	
Mexico	16,500	18,000	25,000	20,734	24,485	15,800,000	
Total	**7,912,702**	**9,633,306**	**10,944,030**	**12,770,680**	**15,760,758**	**132,616,000**	**87.44**
Central America—							
British Honduras	60	60	68	73	99	45,000	
Costa Rica	200	200	200	268	325	459,000	
Guatemala	350	350	500	884	575	2,004,000	
Honduras	125	125	200	232	240	662,000	
Nicaragua	200	200	270	290	300	639,000	
Panama Canal Zone (U. S.)	600	1,500	1,950	1,323	2,127	401,000	
Panama, Republic	---	----	----	790	815		
Salvador	100	100	300	415	525	1,336,000	
Total	**1,635**	**2,535**	**3,488**	**4,275**	**5,006**	**5,546,000**	**.03**
West Indies—							
Bahama Islands (British)	----	----	150	280	551	53,000	
Barbadoes (British)	700	700	1,000	1,100	1,125	199,000	
Cuba	22,000	31,800	32,000	33,800	36,500	3,123,000	
Dominican Republic	1,500	1,500	1,800	1,939	2,110	700,000	
Dutch West Indies, or Curacoa	150	150	243	243	321	53,000	
Guadalupe	203	300	500	540	590	229,000	
Haiti	300	400	460	622	685	2,500,000	
Jamaica (British)	1,650	2,130	2,100	2,135	2,817	858,000	
Martinique (French)	719	800	1,000	1,000	983	245,000	
Porto Rico (U. S.)	5,085	5,500	6,500	6,656	9,500	1,299,000	
Trinidad (British)	1,132	1,200	1,921	1,953	2,050	1,000,000	
Virgin Islands (British and U. S.)	----	250	309	309	309	26,000	
Total	**33,439**	**44,730**	**47,983**	**50,577**	**57,541**	**10,285,000**	**.31**
South America—							
Argentina	26,500	28,000	70,000	78,413	85,850	8,698,000	
Bolivia	550	600	600	365	450	2,899,000	
Brazil	12,500	14,700	18,500	25,000	28,000	30,645,000	
British Guiana	750	800	1,050	1,075	1,400	298,000	
Chile	8,550	8,800	8,000	7,893	8,000	4,038,000	
Colombia	1,200	1,200	2,500	2,154	2,430	5,847,000	
Dutch Guiana	100	120	135	135	140	113,000	
Ecuador	450	450	625	627	620	2,000,000	
French Guiana	100	100	110	110	110	44,000	
Paraguay	100	350	400	470	457	800,000	
Peru	2,000	3,200	3,200	3,306	3,500	4,500,000	
Uruguay	5,800	11,000	10,000	12,500	13,000	1,461,000	
Venezuela	2,150	2,800	2,800	3,350	3,800	2,250,000	
Total	**60,750**	**72,120**	**117,920**	**125,398**	**147,757**	**63,593,000**	**.82**
Europe—							
Austria	19,300	19,300	19,300	11,729	14,325	6,428,000	
Belgium	12,000	13,000	18,500	36,000	57,000	7,593,000	
Bulgaria	100	200	300	650	745	4,909,000	
Czecho-Slovakia	------	------	4,133	9,350	9,159	13,604,000	
Danzig (International Port)	------	------	------	869	1,135	365,000	

Denmark	7,000	7,800	14,000	22,260	42,201	3,318,000	
England, Scotland, Ireland and Wales	255,000	420,000	497,532	498,271	642,853	47,307,000	
Esthonia	------	------	------	254	430	1,250,000	
Finland	2,020	2,000	2,000	2,154	2,300	3,366,000	
France	202,000	202,500	236,148	295,876	444,812	39,402,000	
Germany	75,000	75,000	90,000	128,092	152,068	59,858,000	
Gibraltar (British)	------	90	105	105	150	17,000	
Greece	1,140	2,000	2,500	5,200	4,800	4,777,000	
Hungary	------	------	------	2,200	2,962	7,945,000	
Iceland and Faroe Island	------	130	145	145	175	94,000	
Italy	35,500	35,550	53,000	53,825	75,201	38,835,000	
Jugo-Slavia	------	2,000	2,300	2,300	2,314	11,600,000	
Latvia	------	------	------	160	398	1,850,000	
Lithuania	------	------	------	450	650	4,651,000	
Malta (British)	------	140	209	429	470	212,000	
Netherlands, or Holland	20,000	20,000	20,000	22,740	18,489	6,977,000	
Norway	5,013	12,100	14,340	11,122	12,863	2,691,000	
Poland	------	------	1,700	5,200	10,000	26,376,000	
Portugal	5,000	8,000	8,000	10,600	9,600	5,957,000	
Rumania	2,500	2,500	6,000	6,248	9,750	17,393,000	
Russia and Siberia	15,000	33,200	38,237	13,000	14,000	125,000,000	
Spain	14,850	17,650	41,000	41,000	53,000	21,347,000	
Sweden	10,000	12,000	14,250	29,478	43,000	5,847,000	
Switzerland	14,000	16,500	18,011	19,001	23,039	3,881,000	
Turkey, in Europe and Asia	500	620	1,500	1,950	1,400	12,100,000	
Total	**695,923**	**902,320**	**1,103,210**	**1,230,658**	**1,649,289**	**484,950,000**	**9.15**
Asia—							
Aden (British) and Arabia	------	150	180	243	643	5,055,000	
Ceylon (British)	3,500	3,500	4,350	4,000	4,062	4,505,000	
China and dependencies	2,500	6,000	8,150	7,421	8,847	320,065,000	
Chosen, or Korea (Japan)	------	80	96	------	1,050	17,284,000	
Dutch East Indies	12,500	15,500	18,000	22,000	33,151	49,200,000	
Federated Malay States	3,500	4,000	3,000	3,808	4,000	1,316,000	
French Indo China	1,000	2,000	3,000	3,000	4,272	18,965,000	
Hong Kong (British)	------	550	600	595	799	625,000	
India (British)	18,680	25,550	45,983	46,465	48,629	319,075,000	
Japanese Empire	5,000	11,750	12,260	10,811	10,500	77,005,000	
Mesopotamia	------	------	------	5,000	5,000	2,849,000	
Palestine	------	------	------	800	1,000	755,000	
Persia	------	200	245	689	865	9,500,000	
Philippine Islands (U. S.)	5,067	15,709	15,000	15,791	15,400	10,350,000	
Siam	800	1,300	1,500	1,950	1,941	9,022,000	
Straits Settlements	------	4,500	5,000	6,829	4,000	882,000	
Syria	------	------	------	1,300	1,920	3,000,000	
Total	**52,547**	**90,639**	**117,364**	**130,252**	**146,079**	**849,453,000**	**.81**
Africa—							
Algeria (French)	9,000	9,000	12,000	14,500	8,715	5,801,000	
Angola (Portuguese)	------	------	250	400	500	2,124,000	
Azores (Portuguese)	------	40	80	162	201	242,000	
Belgian Congo	------	------	80	240	245	11,000,000	
British East Africa	900	900	1,000	1,000	1,905	--------	
British South Africa	15,400	29,000	31,000	35,500	38,000	6,729,000	
British West Africa	------	2,000	1,000	3,000	6,050	--------	
Canary Islands (Spain)	------	------	881	1,500	1,859	506,000	
Egypt	1,500	3,000	3,084	4,170	6,650	13,387,000	
French West Africa	------	------	230	230	790	12,283,000	
Gold Coast (British)	------	------	3,500	3,500	4,000	2,100,000	
Liberia	------	8	17	17	24	2,000,000	
Madagascar	------	130	159	239	255	3,545,000	
Madeira Island (Portuguese)	------	40	100	171	184	200,000	
Mauritius (British)	------	------	1,600	1,725	1,872	376,000	
Morocco (French and Spanish)	1,000	1,000	2,500	2,659	5,377	5,950,000	
Nigeria (British Prot.)	------	------	------	1,220	1,200	16,300,000	
Portuguese East Africa, or Mozambique	150	220	200	242	385	3,160,000	
Tripoli (Italy)	700	700	700	700	700	1,000,000	
Tunis (French Prot.)	500	1,000	1,990	2,280	3,219	1,940,000	
Total	**29,150**	**47,038**	**60,371**	**73,455**	**82,130**	**88,623,000**	**.45**
Australia—							
Australia (British)	27,000	78,000	81,000	82,417	118,091	5,436,000	
New Zealand (British)	25,000	30,000	37,500	37,500	44,864	1,274,000	
Total	**52,000**	**108,000**	**118,500**	**119,917**	**162,955**	**6,710,000**	**.90**
Oceania—							
Hawaii (U. S.)	6,500	12,100	12,500	15,000	16,825	291,000	
Samoa (partly U. S.)	------	------	------	------	170	37,000	
British Oceania	------	------	------	152	152	--------	
French Oceania	------	------	------	------	170	--------	
Total	**6,500**	**12,100**	**12,500**	**15,152**	**17,317**	**328,000**	**.09**
Grand total	**8,844,646**	**10,912,788**	**12,525,366**	**14,520,364**	**18,028,832**	**1,642,124,000**	**100.00**

AUTOMOBILES OF THE WORLD IN 1923

ing the growth in the use of motor vehicles in these different countries during the last five years no fact is more outstanding than that relative population has absolutely no connection whatever with relative "absorbing power" of the different countries for motor vehicles.

For example—in South America the registration in Argentina has more than trebled in the last five years—Brazil has more than doubled—Peru has less than doubled—Chile has probably not increased—Colombia has doubled—Uruguay has doubled—Venezuela has less than doubled, while the other countries, combined, have a relatively few motor vehicles. As a whole, the registration in South America has more than doubled in the last five years.

In the Argentine one person in a hundred has a motor vehicle—in Brazil one in a thousand—in Chile one in five hundred—in Colombia one in two thousand—in Uruguay one in a hundred and in Venezuela one in six hundred. Taking South America as a whole there is one motor vehicle for each four hundred and thirty inhabitants.

In Asia there is one motor vehicle for each five thousand seven hundred—in Africa, one for each thousand. In Mexico one for each six hundred—in Europe, one for each three hundred—in England, Scotland, Ireland and Wales combined, there is one for every seventy—in Australia, one for every forty—in Canada, one for every fourteen.

And in the United States there is one motor vehicle for every seven inhabitants.

The background of the growth of motor vehicles has not been population, quantitatively—but population, industrially and financially. And the industrial and financial background in the United States has been more favorable than in any other country in the world. Mexico has one-seventh the population of the United States and one six-hundredth as many automobiles. Racial and national characteristics and types of mind—stage of development of basic resources and the industries built around them, financial, political, social, educational and moral conditions are all reflected, in varying degree, in the growth of the automobile in different countries.

Five Years' Growth

The last five years has seen the motor vehicles in the United States increase from slightly over 7,500,000 to just over 15,000,000—and in the world from slightly less than 9,000,000 to slightly more than 18,000,000.

This marvelous growth, however, is written almost entirely around the United States, as the following tabulation will show:

Country—	Increase in Registration
United States	7,534,054
Canada	306,017
Mexico	7,985
Central America	3,371
West Indies	24,102
South America	87,007
England-Scotland-Wales-Ireland	387,853
France	242,812
Remainder of Europe	322,701
Asia	93,532
Africa	52,980
Australia	110,955
Oceania	10,817
Total Increase	**9,184,186**

Of the above increase the United States contributed 7,534,000, or 82 per cent, while all of the remaining countries in the world contributed 1,650,000, or 18 per cent.

In the five years from the beginning of 1919 to the close of 1923, France, with a population of 40,000,000, increased her motor vehicles by more than 242,000. This increase is greater than the combined increase of Belgium, Holland, Norway, Sweden, Denmark, Switzerland, Poland, Italy, Spain, Portugal, Rumania and Czecho-Slovakia—with a combined population of more than 125,000,000.

The British Empire and its dependencies contributed the following increases in registration during the four-year period:

England-Scotland-Wales-Ireland	387,853
Canada	306,017
Australia	110,955
New Zealand	19,864
Scattering Countries	37,453
Total	**862,142**

British Increase

Therefore of the 1,650,000 increase contributed during the last five years by all of the countries of the world except the United States, the British Empire and her dependencies contributed over 50 per cent.

In the last five years the motor vehicles in the United States have more than doubled—and today we have one motor vehicle to every seven persons. In the same period, in all of the other countries of the world, the number of motor vehicles more than doubled; increasing from 1,285,000 to 2,935,000.

In analyzing the different countries of the world in the search for the most promising fields for increasing the sales of motor vehicles, the accompanying table furnishes an illuminating side light. For it must be obvious that with the rapidly increasing betterment of industrial and financial conditions in foreign countries—and especially in European countries—the percentage of growth in the use of motor vehicles will be much greater in foreign countries, in the next five years, than it can possibly be in the United States, where the ratio is now one motor vehicle to every seven inhabitants.

Europe, Canada and Australia have been the best markets for motor vehicles—and these countries will very probably continue to be the largest purchasers of American-made cars.

The sharp up-swing in the increased use of motor vehicles in foreign countries came in 1923.

Gain in Registration by Years

Year	United States	All Other Countries
1920	1,652,847	415,295
1921	1,237,425	375,153
1922	1,790,531	204,467
1923	2,853,251	655,217
Total	**7,534,054**	**1,650,132**

Europe, with a population of nearly half a billion, is a potential market for millions of cars and trucks—and as the super-capacity of American motor vehicle factories calls for constantly larger markets, an increasing proportion of the sales will undoubtedly come from foreign countries.

Prospective Markets

With the exception of a few countries, the growth in the use of cars and trucks will be much slower in South America, Asia and Africa than in Europe, Canada and Australia.

It is interesting to note, from the accompanying table, that the British colonies and dependencies have almost 50 per cent more cars and trucks than England, Scotland, Ireland and Wales, combined.

Distribution of Motor Vehicles in Foreign Countries in 1923

Country—	Home	Possessions
United States	15,092,177	44,897
British Emp...	642,853	936,669
France	448,812	20,837
Germany	152,068	.....
Belgium	57,000	245
Italy	75,201	700
Spain	53,000	4,548
Portugal	9,600	1,270
Holland	18,489	33,472
Total	**16,549,200**	**1,042,638**
All other countries		436,994

The foregoing figures indicate that about 92 per cent of the cars and trucks of the world is found in the United States and eight European countries. That Europe is rapidly getting on her feet, both industrially and financially, is the best assurance that a market for millions of cars and trucks will gradually open up. And American manufacturers will sell the greater part of them.

Where cars and trucks go, gasoline and lubricating oils must follow. And while the United States is producing about two-thirds of the crude oil of the world, it is supplying a larger proportion of the gasoline and lubricating oil used in foreign lands.

With the bulk of the world's oil coming from the United States, and with a much larger proportion of the world's refining capacity in the United States, it is altogether probable that we will continue to share as liberally in supplying gasoline and lubricating oil to the motor vehicles in foreign lands as we have shared in supplying them with cars and trucks.

FOREIGN AUTOMOBILE FIELD OFFERS POSSIBILITIES OF BIG EXPANSION

By Alfred Reeves
General Manager National Automobile Chamber of Commerce

Broad markets for American motor cars and trucks in Europe are certain to follow the readjustment now being made. More especially will this be so when our American industry carries out its plans for bettering the fundamentals that make for increased motor car use, such as our big manufacturers through their trade organizations have done in this country, with the resultant universal demand for motor transport of persons and merchandise.

Appreciating first the need for a healthy industry and a broad buying market, the leaders in this country, through the National Automobile Chamber of Commerce, have always expended time and money educating the public to the exact economic position of motor cars and trucks. The American people regard motor cars as efficient aids to American business and the American family life, with the result that we use 13,000,000 of them, with trucks also on the increase.

Our work for improved roads, paying a proper share of taxes; better parking and traffic conditions; fair gasoline and registration fees to be expended on the highways; encouraging the owner driver, male and female, and similar education and sales promotion work, has placed the automobile industry well in the lead as it relates to cooperation for the good of all.

European Handicaps

Abroad the use of the motor car has been handicapped by high gasoline taxes and almost prohibitive registration fees. Taxes which add 20 per cent to the cost of gasoline in France, and registration fees of $110 a year on a small American car in England, are examples of things that have handicapped car sales abroad and dwarfed what might otherwise be a healthy manufacturing industry in those countries. Trucks also have been heavily burdened.

All this means that we must go still further with our educating work in Europe, cooperating with dealers and manufacturers in those countries because our interests are common.

General conditions are improving, Germany is coming out of the woods. Holland and Switzerland are constantly getting better. England is attacking her hard problems with an iron hand and getting her currency on a firm basis.

France and Belgium still have some harsh readjustments before the restoration of their exchange.

In Italy, Austria and Hungary the League of Nations has helped in getting things stabilized.

Russia, to use a banking phrase, is what might be termed a country that may be good for a long pull.

Our American industry will probably export more than 400,000 American cars and trucks to 114 foreign countries this year, with England as the best prospect among the countries of Europe.

Situation in England

In the first half of 1923 17,000 American cars went into England from the United States and Canada, whereas the first six months of this year it was less than half of that figure.

There are 6,000 taxicabs not doing very well because they charge a shilling a mile, while the very efficient buses only charge 2 cents a mile. There are about 4,000 buses in London.

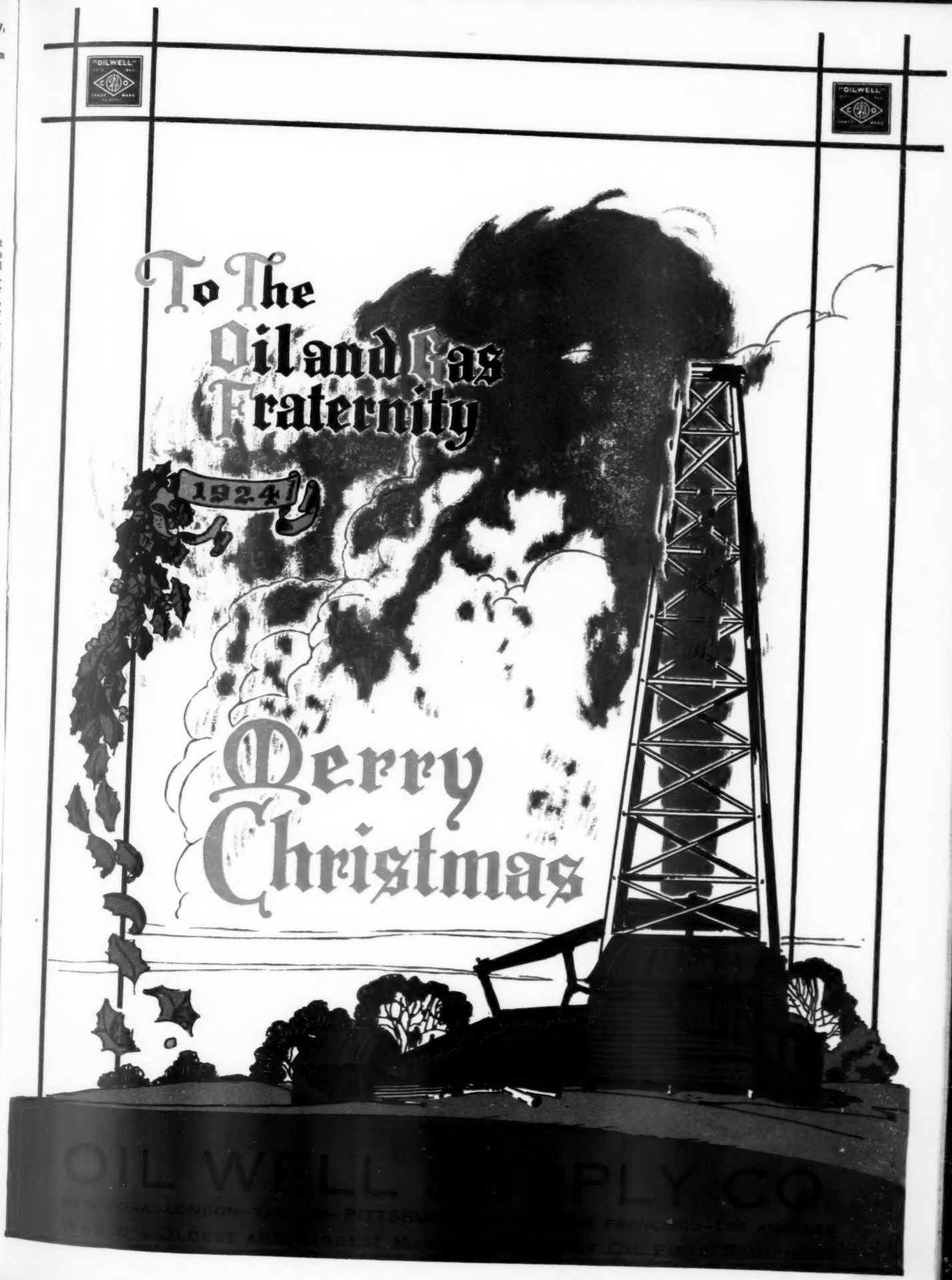
The English car is a good one. They offer about 160 makes to select from, and only American products of high merit with big dollar value can expect any big recognition.

There are about 433,000 cars now registered in England; a little more than 200,000 motor trucks and almost 500,000 motorcycles.

The car makers in England have done better than we have in standardizing on four sizes of balloon tires, whereas we are handling a score or more of them.

The registration fee of £1 or approximately $5 per horsepower, is the biggest handicap to the English industry as well as to American cars. It is payable quarterly. This means that the last month of every three is bad because few will buy a car and pay the high registration fee for the full quarter.

(Continued on Page 152)


"OILWELL"
C O
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To The
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Fraternity
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Merry
Christmas
OIL WELL SUPPLY CO

Great Expansion in Foreign Markets

Increase in 1923 Exceeded in 1924 and Export Officials Look For Even Larger Shipments in the Coming Year

By L. M. Fanning

That foreign markets for petroleum products are due for a great expansion is the opinion of officials of companies engaged in the export trade. A considerable increase in American exports was shown for 1923 and the increase during the first nine months of 1924 has been beyond the expectations of most of the oil companies. In view of the great improvement looked for in foreign countries, particularly in Eprope, with the operation of the Dawes plan, a real boom in export business is anticipated in 1925. There s little doubt that foreign countries, their financial situation greatly improved and industrial activity stimulated, will be heavy purchasers in increased quantities. American oil companies will obtain a good percentage of this increase but it will be in the face of the keenest competition. Russian oil is getting into the European markets more and more and Persian oil is making great inroads. The foreign oil combines have been extending their activities in all countries, and are drawing on foreign oil sources in increasing amounts.

This Year's Exports

During the first nine months of this year, total exports of mineral oil increased 21 per cent over the corresponding period of 1923. Analyzing this increase, it is found that crude oil exports increased 11 per cent and exports of liquid refined products including residuum gained 23 per cent. In 1923 there was registered an increase in total exports as compared with the previous year amounting to 36 per cent. Crude oil exports in 1923 showed an abnormal increase of 70 per cent, while refined product shipments showed a big healthy gain of 30 per cent. Comparison with the pre-war year of 1913 shows that our export trade has expanded in something like equal ratio with our increased domestic business and the general advance of the petroleum industry. The following table compares exports of crude and refined products for stated periods:

Total Exports (Figures in Gallons)

	Crude	No. Refined Products	Total
9 months 1924	575,838,862	2,944,657,440	3,520,496,302
9 months 1923	518,102,194	2,395,443,801	2,913,545,995
Year 1923	716,551,862	3,270,638,102	3,987,189,964
Year 1922	419,793,896	2,502,871,738	2,922,665,634
Year 1913	195,642,935	1,794,129,778	1,989,772,713

Gasoline

	9 Mos. 1924	9 Mos. 1923	Year 1923	Year 1922	Year 1913
France	22.5	26.2	27.1	18.3	10.9
Germany	3.1	1.8	1.7	1.2	8.1
United Kingdom	32.2	29.3	28.4	15.8	10.6
Argentina	2.3	3.7	3.3	1.8	7.5
Brazil	2.2	1.5	1.8	1.6	4.1
Australia	4.5	3.7	3.9	2.0	3.5
New Zealand	2.4	1.9	1.7	1.7	2.3

Illuminating Oil

France	8.9	9.1	11.1	8.2	5.1
Germany	3.1	2.3	3.0	4.7	9.9
United Kingdom	14.5	12.4	12.6	15.5	16.1
Argentina	1.7	1.8	1.5	1.4	2.0
Brazil	2.8	2.5	2.6	2.3	3.1
China	16.3	19.1	17.2	17.4	8.1
Japan	2.4	2.8	2.5	3.3	8.1
Australia	2.8	3.0	2.8	1.7	1.9
New Zealand	.4	.3	.4	.6	.5

Gas and Fuel Oil

France	1.6	2.4	2.6	2.8	...
Germany	2.6	3.3	3.9	5.7	.9
Italy	6.4	4.7	4.4	3.3	2.7
United Kingdom	11.7	13.6	12.2	19.0	39.4
China	3.4	2.5	2.4	2.8	...
Japan	11.5	5.3	5.8	6.8	...
Canada	9.0	12.5	12.5	17.8	18.1
Panama	12.6	16.9	16.0	6.4	11.7
Mexico	8.4	5.3	5.5	6.1	.0001
Chile	12.4	8.6	8.8	5.4	...

Lubricating Oils

France	18.4	15.6	15.9	15.4	12.2
Germany	8.3	11.7	10.6	19.5	12.4
United Kingdom	25.3	26.3	25.4	23.3	28.7
Argentina	2.0	2.0	2.0	1.7	2.5
Brazil	1.7	1.6	1.9	1.6	1.6
China	1.6	1.6	1.6	1.4	.6
Japan	3.2	2.8	3.1	2.1	1.7
Australia	3.1	2.9	2.8	2.1	2.3
New Zealand	.7	.8	.7	.4	.5

In considering exports of crude oil it should be pointed out that these are relatively small and that normally they go mainly to Canada, feeding refineries in that country. However, in 1923, when California's big flush fields came in and with the decline in light oil production in Mexico, a new export outlet was found for crude oil. This was Mexico, herself an exporting oil country. In 1923, 204,597,795 gallons of crude oil were shipped from this country to Mexico, as against an insignificant 1,286,116 gallons in 1922. The bulk of this oil was shipped from California. California shipments to Mexico have been declining in 1924 similarly to the decline of California shipments to the eastern United States seaboard, the total for the nine

(Continued on Page 150-H)

Exports of Gasoline, Naphthas and Other Light Products

(Figures in gallons.)

	Nine Months 1924	Nine Months 1923	Year 1923	Year 1922	Year 1913
Belgium	31,543,212	26,404,807	32,230,891	19,932,006	7,658,151
Denmark	13,775,935	9,212,661	10,347,661	9,121,324	878,387
France	202,997,248	166,410,055	229,592,663	163,384,514	19,996,197
Germany	27,547,713	11,241,616	14,552,142	10,897,965	14,868,975
Italy	27,696,416	27,291,052	34,448,881	20,591,452	7,818,958
Netherlands	17,262,428	6,944,147	10,957,780	15,822,985	10,260,642
Norway	4,833,067	3,683,718	4,309,234	4,829,418	.....
Sweden	16,491,655	15,117,063	15,849,218	11,936,021	1,471,525
United Kingdom	289,774,937	186,043,683	239,981,885	141,449,882	19,476,466
Argentina	20,402,335	23,517,686	28,128,606	15,677,466	13,811,492
Brazil	19,996,433	8,871,645	15,360,086	14,165,704	7,613,783
China	4,521,150	2,403,135	2,555,635	1,158,606	29,450
Japan	6,448,177	3,511,846	8,310,841	5,466,597	809,035
Australia	40,582,284	23,731,020	32,597,138	17,663,876	6,504,551
New Zealand	21,864,313	12,048,991	14,781,755	15,402,473	4,224,230
Other countries	155,202,779	108,362,316	151,689,414	427,730,352	68,098,647
Total	900,940,082	634,795,441	845,693,830	895,230,643	183,520,489

Exports of Illuminating Oil

(Figures in gallons.)

	Nine Months 1924	Nine Months 1923	Year 1923	Year 1922	Year 1913
Belgium	23,039,743	22,508,425	29,052,532	24,768,398	58,881,411
Denmark	17,566,484	14,758,195	19674,036	26,526,053	30,104,209
France	59,450,034	57,026,525	93,822,594	73,105,928	52,953,474
Germany	21,075,041	14,339,577	25,482,035	42,324,706	103,983,882
Italy	21,293,963	18,822,715	25,484,557	17,557,191	21,182,834
Netherlands	58,215,336	44,734,609	61,121,353	80,594,742	134,204,916
Norway	7,876,029	9,767,138	11,946,037	10,004,626	15,027,952
Sweden	14,084,883	13,925,801	16,684,353	14,923,217	28,348,367
United Kingdom	97,467,388	77,375,925	106,757,481	138,474,868	169,288,659
Argentina	11,249,459	11,056,674	12,683,734	12,304,508	21,367,616
Brazil	18,755,158	15,434,187	22,026,619	20,639,460	32,828,176
China	109,253,893	119,108,059	145,523,134	155,426,652	84,471,370
Japan	15,880,630	17,508,730	21,235,092	29,546,154	85,399,913
Australia	19,097,719	18,644,369	23,986,603	15,140,336	19,898,945
New Zealand	3,162,542	2,209,066	3,168,563	5,122,280	5,573,542
Other countries	173,136,139	166,278,426	229,280,731	228,771,522	185,379,031
Total	670,604,441	623,498,511	847,929,454	895,230,641	1,048,894,297

Exports of Gas and Fuel Oil

(Figures in gallons.)

	Nine Months 1924	Nine Months 1923	Year 1923	Year 1922	Year 1913
Belgium	9,038,185	8,478,401	11,438,846	10,042,040	2,056,609
Denmark	7,115,068	14,838,654	24,925,929	17,297,459	3,060
France	16,808,421	21,206,048	31,972,179	19,884,026	.....
Germany	28,031,333	29,016,034	48,032,616	40,048,832	2,988,990
Italy	69,873,749	40,890,714	54,628,687	22,861,286	8,672,713
Netherlands	17,841,998	14,527,584	22,687,089	24,139,758	10,999,464
Norway	6,047,266	4,150,586	11,707,963	10,932,374	.....
Sweden	5,350,284	8,204,106	11,918,475	8,682,217	.....
United Kingdom	127,062,579	118,439,413	149,979,293	132,347,181	126,394,753
Argentina	32,137,236	29,028,883	53,800,485	4,434,221	476,388
Brazil	2,388,102	3,946,318	4,400,557	1,867,872	884,239
China	35,631,649	21,545,430	29,008,667	19,406,447	.....
Japan	124,861,262	45,948,444	70,923,901	47,382,282	.....
Canada	97,630,499	109,021,362	153,170,797	124,157,908	58,043,963
Panama	136,415,593	146,781,893	197,124,102	44,752,826	37,577,050
Mexico	90,908,958	46,229,157	67,826,176	42,212,115	464
Chile	134,530,754	74,898,654	108,301,812	37,792,057	58,244,417
Other countries	141,771,275	131,962,631	176,746,721	88,978,503	14,387,815
Total	1,083,444,211	869,114,312	1,228,594,295	697,219,404	320,529,925

Exports of Lubricating Oils

(Figures in gallons.)

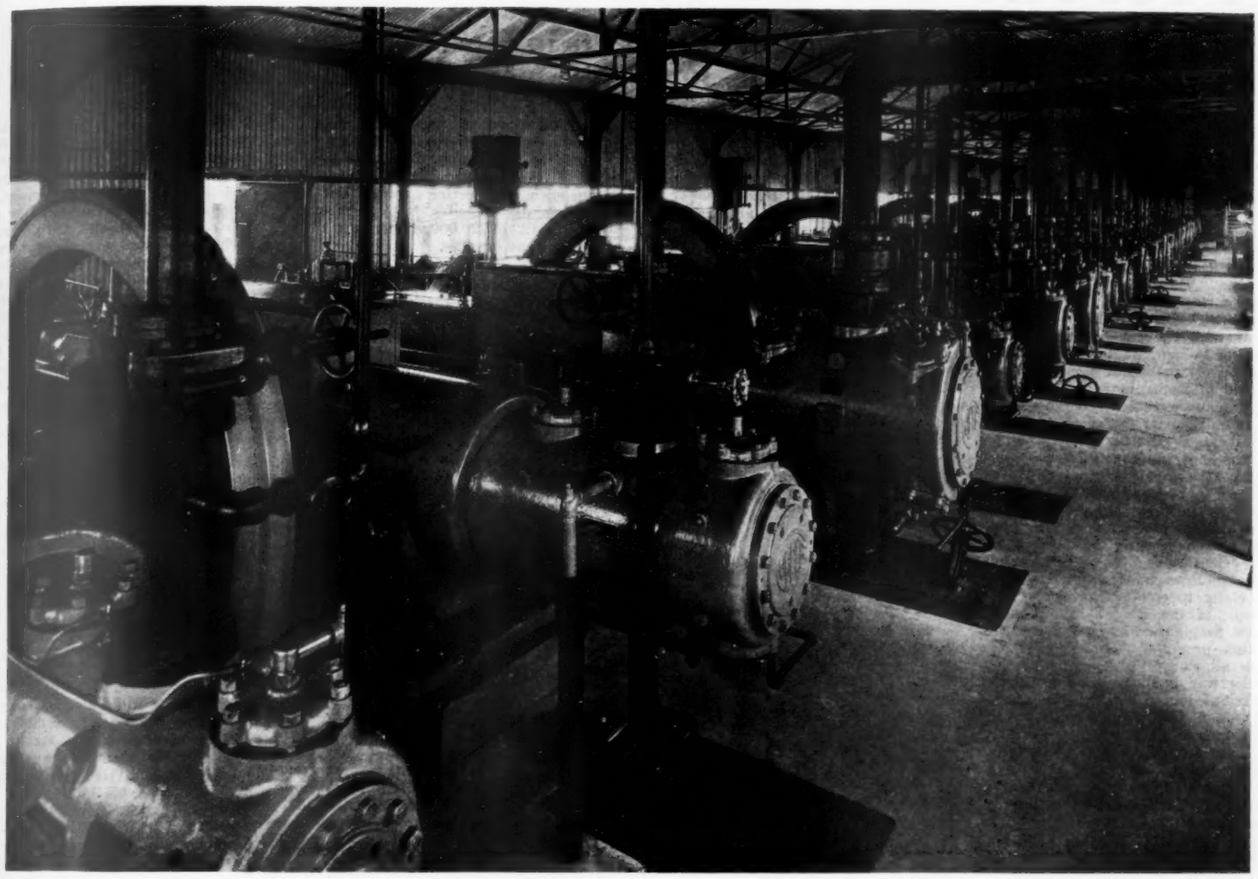
	Nine Months 1924	Nine Months 1923	Year 1923	Year 1922	Year 1913
Belgium	21,734,434	19,745,495	24,927,380	20,649,941	13,782,639
Denmark	4,890,122	3,382,816	6,145,092	2,946,770	2,166,399
France	53,320,458	41,735,242	55,360,169	50,952,077	26,136,545
Germany	24,132,290	31,285,949	37,028,030	64,686,950	26,418,269
Italy	14,005,353	16,194,043	20,260,532	18,649,097	7,637,394
Netherlands	3,407,816	2,738,830	4,045,581	3,082,190	12,174,926
Norway	1,003,341	1,015,931	1,371,131	1,382,407	410,539
Sweden	2,232,100	2,465,767	3,035,456	2,302,594	2,469,900
United Kingdom	73,425,071	70,477,045	88,460,354	77,195,516	61,412,394
Argentina	5,661,232	5,462,479	7,023,401	5,708,007	5,444,151
Brazil	4,983,538	4,270,664	6,824,778	5,453,687	3,403,672
China	4,797,762	4,205,431	5,476,244	4,744,481	1,309,825
Japan	9 266 130	7,491,649	10,705,688	6,964,630	3,670,102
Australia	8,928,758	7,659,880	9,885,283	7,030,630	4,836,060
New Zealand	2,124,389	2,162,700	2,583,015	1,481,263	1,002,051
Other countries	55,755,912	47,741,616	65,288,389	58,129,387	41,396,543
Total	289,668,706	268,035,537	348,420,523	331,359,687	213,671,499

Bill Nearly Ripped the Buttons Off His Vest

Every Tuesday noon about seventy shop foremen and department heads of the Cooper organization eat lunch together in the dining room on the ground floor of the main office. The last thirty to forty minutes of the lunch hour are always spent in discussing ways of bettering Cooper engines and bettering Cooper service to the customer. If a mistake has slipped by or the wrong impression left with a customer, we tell each other about it; or if someone expresses appreciation for some special Cooper service we share the good feeling and satisfaction that comes from it.

On the occasion in mind, Fred Thomas, Sales Manager, was telling us about Empire Gasoline Company's new Burbank Station and how he believed the Empire Company had appreciated our special effort to meet an almost impossible delivery demand. Bill Sutton's chest swelled to the limit of his vest. While not all of us knew it, it was Bill who worked his assembly gang night after night until ten o'clock and Saturday afternoons, when everyone wanted to make garden or go "flivverin" with the kids, just to measure up to Empire's confidence in the Cooper Company. That's the spirit that makes Cooper products different.

COOPER



"Will It Reduce the Cost of Gasoline?"

That was the test applied to every suggestion made in designing Empire Gasoline Company's new Burbank Plant. Everyone who had any contact with the proposed gasoline plant soon learned that it was to be no monument to anyone's pet ideas. There was just one way to get General Manager E. L. Peck's O. K. That meant that you had to show him how your suggestion would reduce his cost of operation.

The result is a simplified gasoline plant, devoid of all costly "flub dubs," that is giving as near 100% operation as it will probably ever be practically possible to get. The materials were chosen and every detail of design handled with such care that it requires but two men per shift to operate the plant. The power costs and general maintenance costs are equally low.

The photographs show both the power and compressor ends of nine 160 B.H.P. and three 80 B.H.P. Cooper Gas Engines in Empire Gasoline Company's Burbank Plant.

THE C. & G. COOPER CO., MT. VERNON, OHIO

504 Kennedy Bldg., Tulsa 1605 Kirby Bldg.

ENGINES

Present Oil Production in Europe

Summary of Operations and Prospects in Fields of Rumania, Czecho-Slovakia, Hungary, Austria, Jugoslavia, Germany, Poland and France

One of the most important crude oil producing countries of the European Continent is Rumania.

Production of all European oil fields has considerably decreased compared with their production prior to the war. This diminution has been caused partly by measures taken by the belligerents—for instance in Rumania—or by revolutions as in Russia. The Galician oil industry has suffered from the war as well as from political actions which arose in connection with the constitution of the new State of Poland.

Comparatively the worst damages have been caused in Rumania whose oil wells and equipments were entirely destroyed which was only partly the case in Russia and in Galicia. Whilst up to the present Russia has not approached even approximately the yield of crude oil obtained prior to war, and Galicia shows an enormous decline, Rumania could nearly obtain the production she had in peace, and even recently has surpassed it. New orientations of interior and commercial politics in Greater Rumania and the claim to employ in the further development of the Rumanian oil fields Rumanian people and capital have retarded this progress. The scarcity of capital in all European countries at the end of the war has of course considerably contributed to this fact.

But it is a favorable indication for Rumania as an oil producing country that in spite of such manifold obstacles Rumanian crude oil production has reached its former importance and even has surpassed it. The following figures will demonstrate this fact:

The last normal production prior to war, 1913, was 1,885,619 tons=157,135 tons per month. The year 1914 must be considered as an abnormal one, although Rumania only entered the war in 1916, owing to the obstacles which rose in the beginning of the war for the Rumanian production.

The average production per annum was: In 1922, 1,368,000 tons or 114,000 tons per month; in 1923, 1,500,000 tons or 125,000 tons per month, and for 1924 the following figures are reported:

	Tons
January	132,751
February	120,539
March	137,847
April	154,617
May	161,195
June	150,596
July	159,000
August	165,000

It is true the rapid increase in the last month must be attributed to several gushers the production of which will of course decrease as regards the single wells, but it may be reckoned, in spite of this fact, with an increasing production, as Rumanian oil wells, if they give really a normal output, will stay a longer period in a continuous production and besides, a good many of the wells being drilled will become productive. An essential feature in the development of the Rumanian oil industry is the future importance of the sale of crude oil and of its by-products and this will depend to a great part upon the help that the Rumanian Government will allow to producers in facilitating the conditions of sale and in amortising the debts of the production companies.

For several months there has been a strong depression in this respect, as owing to want of an outlet prices have considerably dropped. The crude oil that has some months ago obtained 28/30,000 lei per 10,000 kilos is scarcely worth 18,000 lei at present. In general, the prices are about the same as those prior to war, but it must be taken into consideration, as to crude oil producers only, that the prime costs owing to increased cost of materials, wages and taxes are considerably higher than before the war. Companies in possession of their own refineries are somewhat more favored in this respect.

An uncertainty has subsisted these last two years in the Rumanian oil industry in consequence of the tendencies of the Rumanian Government to nationalize the oil fields. The technical conditions as to fixing the drilling site have been altered. Whilst formerly wells must be distant 30 metres one from another, the new law prescribes a distance of 60 metres. Consequently there will be in future less opportunity of mutual gathering oil, in any case such tendencies will become less prejudicial for the general interests.

The Rumanian oil industry has been developed by foreign capital. Prior to the war about 93 per cent of the capital was invested by foreigners. This capital was apportioned as follows:

Germany and Austria	about 30 %
Great Britain	about 24 %
Holland	about 20 %
France and Switzerland	about 7½ %
America	about 6 %
Belgium	about 4 %
Italy	about 1¼ %
Rumania	about 7 %

corresponding to a capital totally invested of about 400,000,000 lei.

After the war this was completely revolutioned as German capital has been entirely eliminated. The German participants have been transferred to Rumanian as well as to English, French and Belgian concerns.

France

For any modern state the provision with oil is of extraordinary importance. The French Government is quite aware of this, but up to the present it has been impossible to solve this question in a satisfactory manner. In the meantime France is trying to secure and cover the demand by participating in existing petroleum undertakings and oil fields within and outside of Europe. Concurrently with this rather extensive prospecting work is done in France as well as in the French Colonies and Protectorates, in order to find out oil bearing strata which will permit of commercial exploitation. This work, however, is somewhat hindered by the conditions now customary throughout the world as are imposed on prospecting and exploiting concessions, offering little advantage to private enterprise. In consequence thereof the Government had to assist even such prospecting work and the Chambre des Deputes last year agreed to a credit of 20,000,000 francs to be used for that purpose.

The only existing oil producing field in France up to this day is near Pechelbronn situated at the north of Strasbourg, where, as will be known, the chief production is obtained by means of shafts and galleries at a depth of about 300 metres. This mode of production is rather peculiar and has so far been employed nowhere else for oil extraction; however, the results obtained by it have been suprisingly good, so that it was possible to increase the production from 50,000 tons in 1920 to nearly 100,000 tons during the present year. Also several hundred wells are producing at depths varying from 150 to 600 metres. The oil sand of Pechelbronn is not very rich of oil, but the strata bearing it is of rather large extension. The oil of Pechelbronn has a specific weight of 0.88 and the contents of benzine is about 4 per cent. On many other places in France traces of oil have been found and in the departments of the Auvergne, Lendes, Basses-Pyrenees, Gard and Jura and others a great many boreholes have been sunk, most of them however did not exceed 300 to 400 metres and only in some isolated cases a depth of more than 1,000 metres was attained. Apart from the gas well drilled in 1921 near Vaux-en-Bugey (Jura) to a depth of 325 metres and having a production of gas of 70 metres per minute at a pressure of about 15 atm., all other drilling was done without any practical result.

Only recently however the Government has from a well sunk near Gabian in the Department Herault at a depth of 97 metres attained a production of about 10 gallons per hour, which would perhaps permit of an exploitation similar to that of Pechelbronn.

Taking things on the whole it must be said that there seems to be little likelihood of finding rich oil fields in France. The total consumption of petroleum amounted in 1923 to 1,500,000 tons, half of which was benzine.

Some oil is also produced by distillation of shales, besides the production in Pechelbronn, and experiments tending to artificially manufacturing petroleum are frequently made, without however allowing the quantities obtained thereby to be of any importance in respect of the total consumption. Also the prospecting work in the colonies and protectorates Morocco and Algiers have so far not shown any practical result, whereas it seems that Madagascar and also Tunisie offer the means of practical exploitation.

Czecho-Slovakia

The traces of oil and isolated emerging of gas in the Carpathian hills on the side belonging formerly to Hungary, which have been known for years have led to a series of drillings on the part of the Hungarian Government. Particularly the district of Egbell must be mentioned, where before the war, since 1912, a number of wells were put down to about 180 metres, with only a moderate success. The oil found at Egbell shows only small traces of benzine and was used after a simple process as grease oil for steam engines. The presence of petroleum in that district never proved important. After the establishment of the Czecho-Slovakian State its Government tried to augment the production by increasing the activity in drilling. During that time oil mining was monopolized in Czecho-Slovakia and attempt made to place this monopoly with some foreign group. The negotiations carried on have however been unsuccessful. In consequence the Czecho-Slovakian Government decided to drill wells on its own accunt in the old field of Egbell, where over 160 drillings were undertaken. The result was a very moderate one and even below that of the Hungarians.

Further attempts have been made near the town Goding, where oil was found at about 200 metres in quality similar to that of Egbell, but nothing is known as to the possible production.

Near Ratischkovic, not far from Goding, the "Opiag" company has drilled to a depth of 600 metres. Oil was found in small quantity which, different from that of Egbell, contained benzine. Near Dubnian in the neighborhood of Ratischkovic natural gas has been struck. Drilling tests have also been made in former years in Gaya, Landshut and Austerlitz, but without any result.

Experience to date shows there is hardly to be reckoned with an appreciable production of oil in Czecho-Slovakia.

Hungary and Jugolslavia

In both Hungary and Jugoslovakia the Government has taken steps to promote drilling and Hungary has a monopoly covering oil and gas. In Hungary drilling was effected by a Government concern and by the Hungarian Oil Syndicate, Ltd. Neither met with any success. Lately drilling has been taken up in Baja by some companies, Government and private undertakings combined.

Gas has been found in the Plain of the Theiss (Alfold), although of no importance. The Hungarian Government is furthering all endeavors to create a national petroleum industry.

Prospecting work has been carried on by the "Fanto" many years ago on the Mur-Island in Jugoslavia and the Mejumurske-Petrolejsko has seriously taken up drilling in that part. Reliable data does not exist, though it is known that a depth of 400 metres was reached.

The Anglo-Persian Oil Co. likewise made drilling tests through the "Bir-

(Continued on Page 196)

ONCE PRODUCING HALF WORLD'S OIL RUSSIAN OUTPUT NOW BUT 4 PER CENT

Although the news about the Russian oil fields has been more abundant of late the details as to the output and drilling are given according to the official Russian press statistics.

There are numerous places where oil was traced extending almost over the entire former Russian Empire, but only the districts around the Caspian Sea have been exploited up to now. The three chief producing fields are (1) Baku, (2) Grosny and (3) Emba. Taking the latter as a uit, Grosny will have to be rated about 15 and Baku about 40.

The yearly production of the Emba fields, situated some 30 miles to the north of the Caspian Sea, was calculated for the year ending on September 30, 1924 at 1.2 million barrels, but it seems that 0.8 million have not been attained. This rather unsatisfactory result may be attributed partly to great transport difficulties in the supply of material as well as in the transport of oil. Last year about 1,500 metres have been drilled.

The Grosny fields on the contrary, situated on the northern side of the Caucasus, show a yearly output of about 12,000,000 bbls. against a calculated production like that of 1923 i. e. 10.5 million. With this they are very near their production of 1917 (13,000,000 bbls.) Last year about 40,000 metres were drilled.

The Baku fields are as already stated by far the most important with a yearly production of about 30,000,000 bbls. against 26,000,000 in 1923. However, this output is yet only 60 per cent compared with the production of 1917 (50,000,000 bbls.) Altogether about 75,000 metres have been drilled, being not quite one-third of the figure obtained per year prior to war. Being by far the most important producer the Baku fields have the main interest and the following therefore refers in general to them.

Ancient Fire Worship

The naphtha sources of the Apscheron Peninsula are supposed to be those to which reference is made in the oldest accounts; it is supposed that in the sixth century pyrolatry was practiced here and it is thought possible that by the fires of Baku Zoroaster was incited to set up his rite. It is a fact that the fire worshippers always returned there, in spite of their temple having been repeatedly destroyed by Arabian conquerors and even up to the last century (1870) some Parsee prients were residing at the temple of Surochany. Also the famous Italian explorer Marco Polo (1254-1323) tells of the oil trade carried on with Persia and India, where originally it was used as medicine, later also for lighting purposes. Peter the Great, realiz-

(Continued on Page 150-H)

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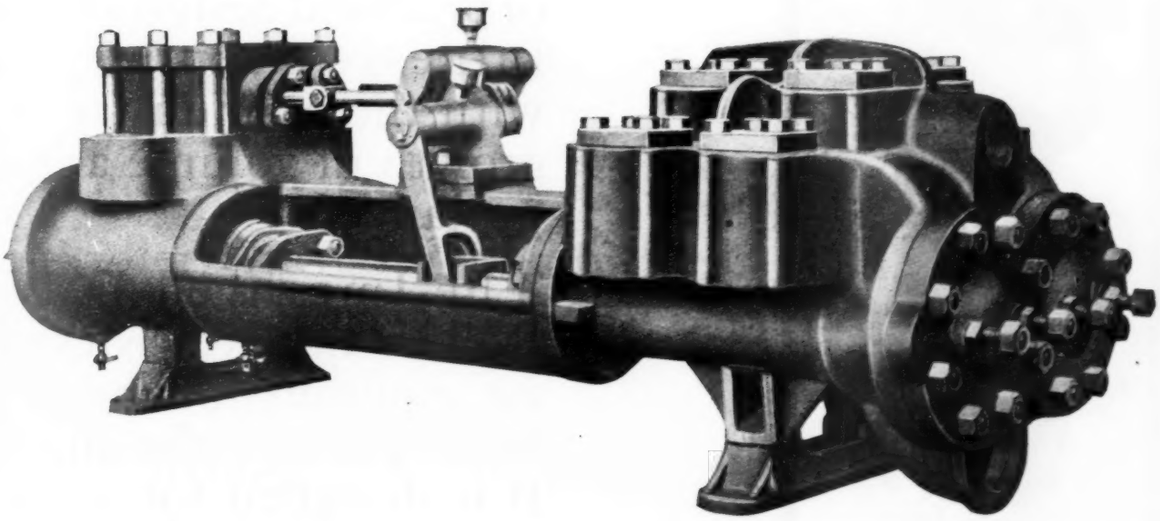

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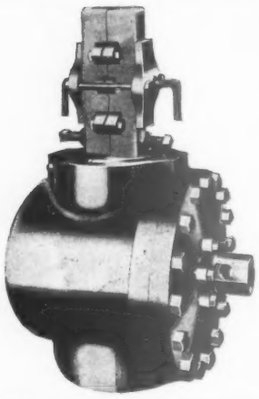
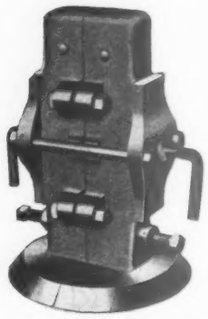
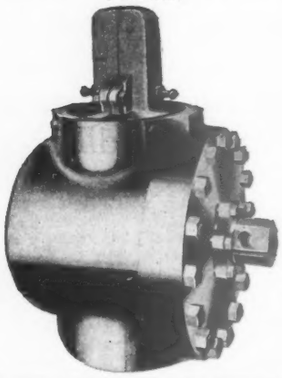


Improved Double Roller Oil Saver in Screwed Type Control Head. (Patented)



Improved Double Roller Oil Saver (Patented)



The Roller Oil Saver in the Control Casing Head. (Patented.)

THIS organization is constantly bringing forward new equipment of practical design and usefulness—keeping pace with the oil industry in its growth of volume and importance.

The Improved Double Roller Oil Saver is the latest equipment which has been put on the market. It is designed for wells of the strongest pressure, and allows for the changing of the rubbers with no loss whatsoever of oil during drilling operations.

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The Control Head is made in sizes 4¼ to 12½ inches. The Roller Oil Saver fits into all sizes of the Screwed Type Control Head.

The Common and Tee Casing Head is made in all sizes from 4¼ to 12½ inches.

The Roller Oil Saver fits into both casing heads as well as the Control head, without drawing tools, cutting the line.

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The Flange Type of Control Casing Head (Patented.)

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Europe, Coming Back, Using More Oil

Comparison of Imports by the Various Countries in Past Few Years Shows Remarkable Gain in Consumption of Petroleum

By Staff Correspondent

PARIS, France, Dec. 6. — One of the indisputable proofs that the European States are coming back to a normal trade and industrial life can undoubtedly be found in the statistics concerning their domestic consumption of oil products during the recent years.

More motor vehicles are being used, bunker oil is steadily replacing coal for the production of steam in the boilers of the ships of the European navies and merchant marines; internal combustion engines are gaining in favor as a means of propelling boats, instead of steam; oil residues are increasingly being used as fuel by many industries. The growing of commercial aviation requires larger quantities of gasoline, and the development of all the industries causing a more extensive use of modern machinery requires also a much larger supply of mineral lubricants.

A fair idea of the oil products' consumption of the various European States can be had from the statistics concerning their imports. Most of these States, outside of Russia, Rumania and Poland, are not large producers of crude oil. They all have to import their supplies from foreign countries so their consumption can well be considered as corresponding to their imports. A few add to their imports varying amounts of home production. France, for instance, produces about 70,000 tons of crude oil, converted into subproducts, principally lubricants. Germany produces about 40,000 tons of crude and an unknown but very important amount of shale and lignite oils. Italy also produces about 6,000 tons of an oil of excellent quality.

OIL IMPORTS OF THE EUROPEAN STATES

UNITED KINGDOM
(Unit=1,000 Imperial gallons)

	1921	1922	1923	9 Months 1924
Crude oils	99,592	217,133	324,617	320,073
Kerosene	149,348	152,537	145,191	94,417
Motor gasoline	251,098	311,190	327,233	323,289
Other naphthas	25	3	2,670	2,466
Lubricants	50,966	69,440	82,222	77,314
Gas oil	76,826	70,153	70,746	52,558
Fuel oil	533,131	392,618	363,738	293,064
Other sorts	60	32	64	235
Total	1,161,049	1,213,108	1,326,484	1,164,319
Monthly average	93,000	101,000	110,500	129,300

FRANCE
(Metric tons.)

	1921	1922	1923	9 Months 1924
Crude oils	371	1,510	1,098	154
Kerosene	196,844	210,954	297,533	208,585
Gasoline	409,915	551,888	727,679	648,119
Lubricants	117,749	187,175	204,359	183,716
Gas and fuel oils	47,863	77,068	112,654	115,021
Other products	3,665	4,904	10,240	8,642
Total	776,407	1,133,499	1,353,563	1,164,237
Monthly average	64,700	94,400	112,800	129,300

GERMANY
(Metric tons.)

	1922	1923	5 Months 1924
Crude oil	30,602	12,549	4,130
Heavy benzin	53,917	58,847	30,352
Gasoline	84,326	76,736	36,677
Crude benzin	79,203	38,781	11,084
Kerosene	192,651	77,261	35,750
Other light products	80,446	67,828	37,076
Lubricants	299,593	155,295	95,313
Total	790,738	483,287	250,382
Monthly average	65,890	40,200	50,800

ITALY
(Metric tons.)

	1921	1922	1923	6 Months 1924
Crude oils	*60,532	8,121	25,464	.....
Kerosene	97,434	99,132	114,077	50,402
Gasoline	103,421	114,681	132,636	70,806
Lubricants	.....	86,789	73,342	38,179
Fuel oils	.....	154,723	119,636	159,980
Total	261,387	443,446	465,155	319,367
Monthly average	21,700	36,100	38,700	53,200

*Includes lubricants and residues.

HOLLAND
(Metric tons.)

	1921	1922	1923	5 Months 1924
Kerosene	155,992	170,808	196,521	107,454
Gasoline	38,862	46,886	68,397	37,143
Lubricants	19,378	24,755	31,942	19,221
Gas oils	52,800	50,806	62,617	24,899
Crude and fuel oils	152,486	203,845	256,872	81,258
Total	419,518	497,100	616,349	369,975
Monthly average	34,900	41,400	51,300	53,900

BELGIUM
(Metric tons.)

	1921	1922	1923	3 Months 1924
Crude oil	10,102	1,434	1,262	.....
Kerosene	}	77,918	105,005	30,516
Gasoline	} 65,411	41,089	103,561	36,276
Lubricants	}	86,663	66,667	17,367
Fuel oil	} 134,480	2,588	26,110	7,827
Total	209,993	209,692	302,606	91,986
Monthly average	17,500	17,500	25,200	30,600

SWEDEN
(Metric tons.)

	1921	1922	1923	9 Months 1924
Crude oil	36,521	42,633	45,704	.....
Kerosene	41,477	56,413	57,406	47,626
Gasoline	48,375	56,788	86,165	68,978
Lubricants	13,195	19,382	24,375	22,113
Gas and fuel oils	4,400	2,548	4,001	33,611
Total	144,468	177,764	217,641	172,328
Monthly average	12,000	14,900	18,100	19,100

NORWAY
(Metric tons.)

	1921	1922	1923
Kerosene	66,594	128,452	122,916
Gasoline	21,643	21,285	23,660
Other products	3,780	9,133	9,084
Total	92,017	158,870	160,660
Monthly average	7,600	13,200	13,300

SPAIN
(Metric tons.)

	1921	1922	1923
Crude oils	.....	45	916
Kerosene	855	8,352	11,420
Gasolines	50,338	66,011	96,901
Lubricants	14,747	17,741	24,852
Gas and fuel oil	28,126	13,127	14,220
Other products	49,098	30,293	7,500
Total	143,194	135,669	164,195
Monthly average	11,930	11,300	13,600

CZECHO SLOVAKIA
(Metric tons.)

	1921	1922	1923
Crude oils	49,780	23,677	9,000
Kerosene	17,626	16,518	13,920
Gasoline	10,415	25,419	26,440
Lubricants	5,417	12,868	26,795
Other mineral oils	18,467	3,411	64,829
Total	101,705	78,933	138,983
Monthly average	8,400	6,600	11,600

SWITZERLAND
(Metric tons.)

	1921	1922	1923
Kerosene	10,652	21,862	18,322
Gasoline	24,854	41,500	46,139
Lubricants	9,052	10,896	12,963
Fuel oils	9,237	24,085	28,742
Total	53,795	98,343	106,247
Monthly average	4,480	8,190	9,000

HUNGARIA
(Metric tons.)

	1921	1922	1923
Crude oil	11,211	15,322	16,671
Kerosene	12,034	16,148	12,345
Gasoline	13,531	17,566	18,922
Lubricants	16,030	16,990	18,871
Gas and fuel oils	7,632	8,093	9,211
Total	60,438	74,120	76,320
Monthly average	5,030	6,170	6,350

GREECE
(Metric tons.)

	1921	1922	1923
Crude oil	8,638	10,052	12,340
Kerosene	3,056	3,440	3,413
Gasoline	8,370	11,178	9,959
Lubricants	2,770	2,850	3,995
Fuel oil	6,782	8,341	10,227
Total	29,616	35,861	39,944
Monthly average	2,460	2,990	3,320

BULGARIA
(Metric tons.)

	1921	1922	6 Months 1923
Kerosene	19,660	16,975	8,047
Gasoline	2,521	2,014	1,971
Lubricants	9,338	4,397	2,726
Gas and fuel oils	.....	7,535	6,673
Other products	.....	103	67
Total	31,519	31,024	19,580
Monthly average	2,620	2,590	3,420

Increase in Motors

As will be noted, there is not one European country, outside of Germany, which does not show an increase in consumption, even taking into consideration the rather unimportant quantities re-exported by some, such as the United Kingdom. This increase in consumption may well be explained by the increase in the number of motor vehicles registered in the various countries.

From all recent reports it appears that the number of motor vehicles registered in Europe will show an even greater increase than during the past years.

In no branch of Europe's economic and industrial life can any sign be found of a probable decrease of oil consumption. On the contrary everything tends to show that the more Europe will be recovering from the many and disastrous effects of the world war the more she will need liquid fuels. On sea, on land and in the air it is easy to find indications of a certain increase in consumption.

Motorship Growth

Lloyd's Register shipbuilding returns for the quarter ended September show the tonnage of motorships under construction establishes a record, while in all countries, with the one exception of the United Kingdom, the motorship tonnage under construction for the first time exceeds that of the steamers. Within the past year, the decrease in steamer tonnage has been 14.7 per cent, while the increase in motorship tonnage was not less than 102 per cent. The best example of this can surely be found in Norway, where, out of 73 ships of all classes, of a tonnage of 332,000 tons, ordered to be built for Norwegian ship owners, a number of 36, equivalent to 277,000 tons, or 86 per cent of the total building, are motorships.

On land, the use of motor buses as a means of transportation to connect territories deprived of rail connections can be expected to increase in quite unusual proportions.

Commercial aviation is also considerably progressing. Taking France as an example, commercial air services are being regularly run from Paris to London, to Amsterdam, to Warsaw, to Bucharest and Constantinople, to North Africa and Casa Blanca (Morocco). The Warsaw line is, moreover, to be extended as far as Moscow, while the Casa Blanca line will shortly be extended a further 2,000 kilometers as far as Dakar, Senegal.

Nothing but an increase of consumption can be expected during the coming years. Such a fact is being realised by all the European States, big or small, which are not only trying to develop a national oil industry but also lend their utmost efforts towards the discovery of commercial oil substitutes.

Oil in Egypt; Shale in South Africa

Anglo-Egyptian Oil Fields Co. Leads in Production in Land of the Nile. Southern Union Would Give Bonus for Oil Industry

By Charles E. Kern

WASHINGTON, D. C., Dec. 15.—News has just been received here of a new effort of the Union of South Africa to develop its oil resources. This has taken the form of a motion in the Parliament providing that the Government take into consideration the question of encouraging and fostering the oil industry of the Union by granting a bounty and assisting the industry through the railways.

The member who presented the resolution referred to the seams of torbanite and the oil shales in the Union, and claimed there was not only possibility, but almost a certainty, that an industry could be established which would be of inestimable benefit to the country. He favored a bounty of 3d (about 6 cents) per gallon for the first 5,000,000 gallons of petrol (gasoline), 2d per gallon on the first 5,000,000 gallons of paraffin (kerosene) and 1d for the first 5,000,000 gallons of lubricating oil, which would amount to something over 125,000 pounds sterling, spread over a period of years. He also wished to have protection of the Union of South Africa against "the big oil groups." This he wished to accomplish by custom duties or otherwise. He also favored reduced railway rates on locally produced oil.

The member who seconded this motion pointed out that the proposal was in keeping with the Government's declared policy of "South Africa First." As finally adopted, the motion merely admonished the Government to take into consideration the question of encouraging and fostering the oil industry of the Union. This effort to induce someone to develop the oil industry by governmental encouragement is conclusive proof that the prospects for oil in the Union of South Africa are not at all alluring.

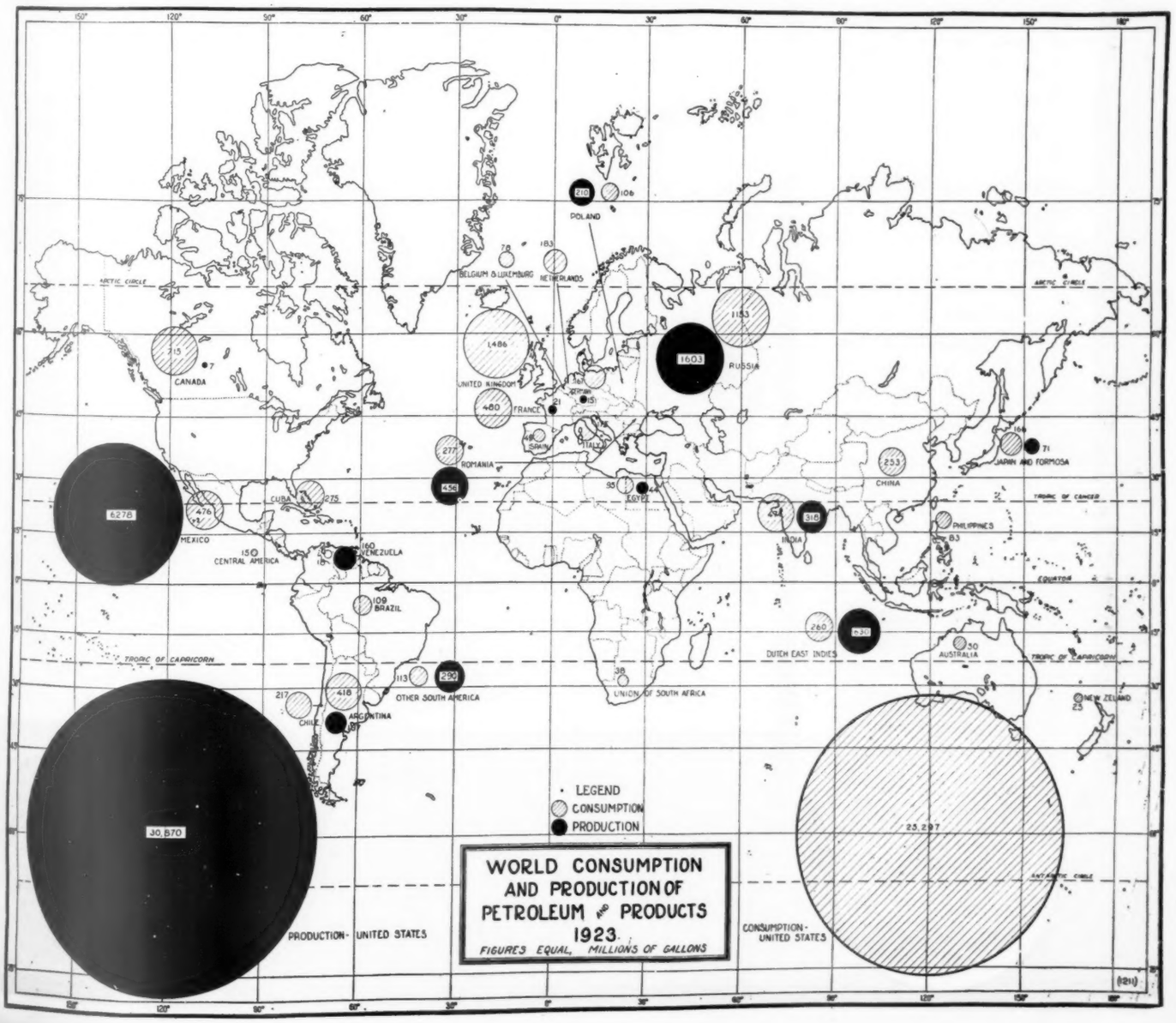
The greatest producing company in Africa is the Anglo-Egyptian Oil Fields Co., which has drilled 44 wells in the Hurghada district. Of these wells 26 were producing at a recent date. In the Gemsah district, the same company has drilled 22 wells, 6 of which have proved productive and three of these are now producing oil.

At the beginning of 1922 petroleum prospecting licenses in Egypt covered 660 square kilometers and 14 square kilometers were held under petroleum mining leases. Practically no production has been obtained outside of the Hurghada and Gemsah districts. The production of the Gemsah district reached its peak in 1914 when it produced 88,941 tons and in 1921 it dropped to a production of 4,209 tons. In the case of the Hurghada district, however, the first production was in 1914 and in 1918 it had reached 276,868 tons from which high level it fell to 178,284 tons in 1921. In the latter year the total Egyptian production was 182,681 tons. This production represented a great deal of drilling activity.

From 1908 there were drilled in Egypt 211 wells, the largest number being put down in 1922, when 26 were drilled. Of the 211 drilled wells only 31 were producing in 1921. These were not deep wells. In fact, they do not average 1,000 feet each, so it is still a matter of speculation what might be accomplished with deeper drilling. Most of this drilling is in the region of the Suez Canal and the Red Sea and the Anglo-Egyptian Oil Fields Co. holds the concession for development of the oil deposits of the Hurghada.

A total of 44 wells have been drilled in

(Continued on Page 150-D)



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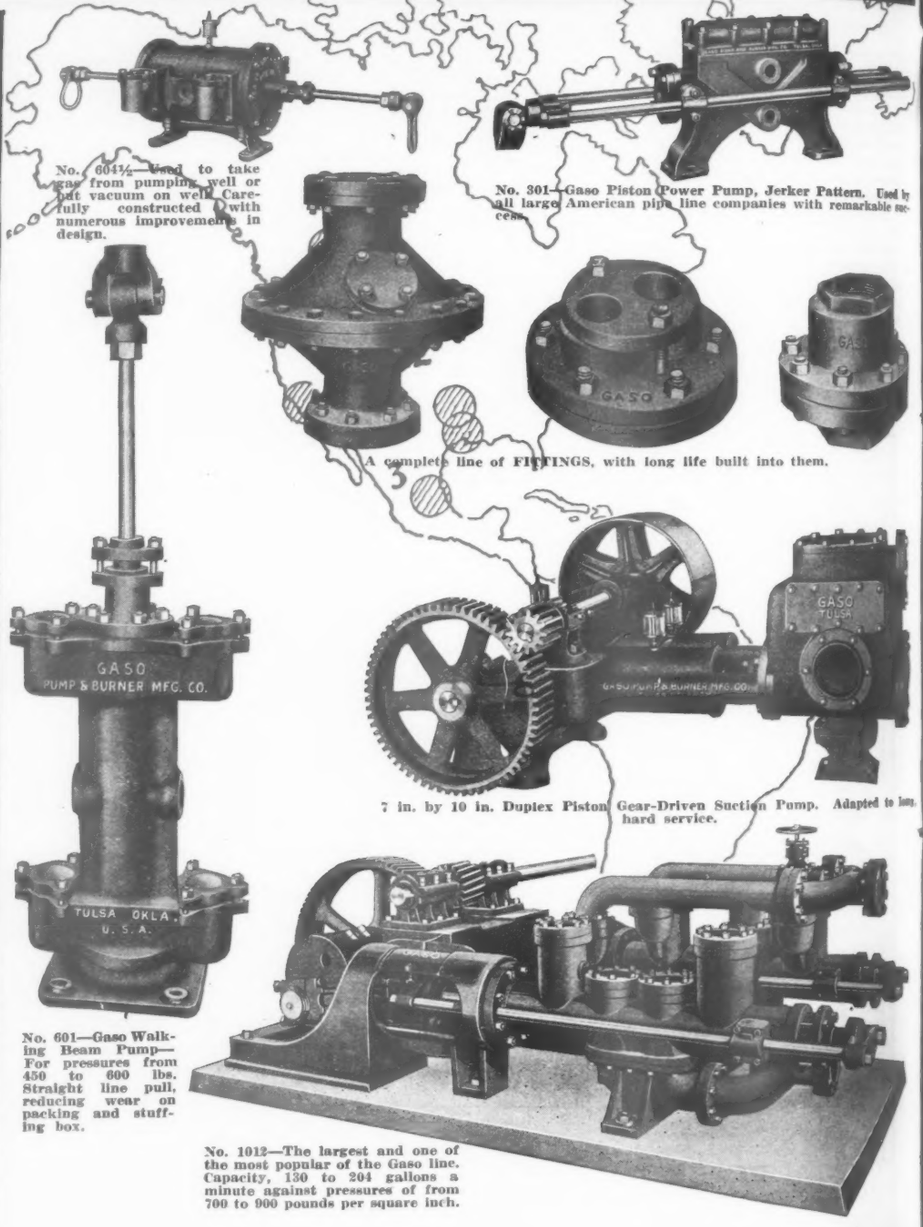

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No. 301—Gaso Piston Power Pump, Jerker Pattern. Used by all large American pipe line companies with remarkable success.

A complete line of FITTINGS, with long life built into them.

7 in. by 10 in. Duplex Piston Gear-Driven Suction Pump. Adapted to long, hard service.

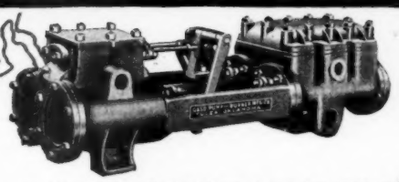
No. 601—Gaso Walking Beam Pump—For pressures from 450 to 600 lbs. Straight line pull, reducing wear on packing and stuffing box.

No. 1012—The largest and one of the most popular of the Gaso line. Capacity, 130 to 204 gallons a minute against pressures of from 700 to 900 pounds per square inch.

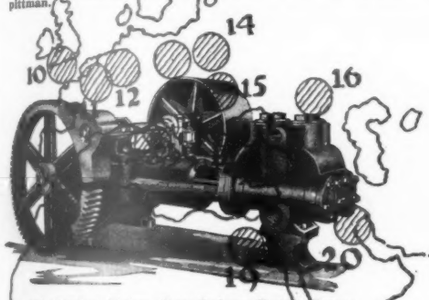
GASO
for every oil

GASOS stand supreme

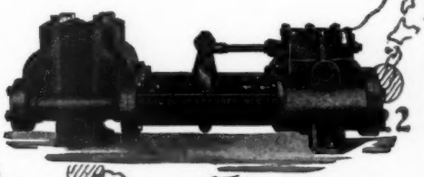
No. 201—A general-purpose pump that may be connected either with rod or shackle line between power and well or direct with pitman.



No. 401—Duplex Piston Steam Pump for pressures ranging from 200 to 800 lbs. Simple, yet does the work of much more expensive and complicated equipment. Extensively used on oil lines and long water lines.

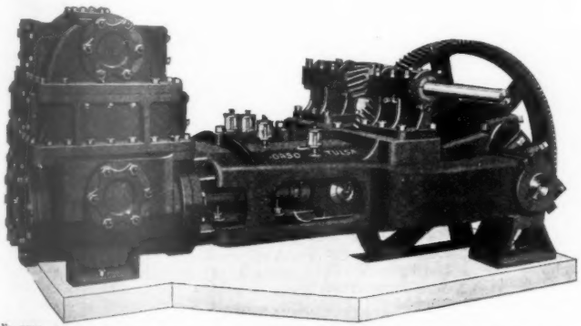


No. 504—Duplex Piston Gear-Driven Power Pump —Specially designed to pump gasoline and acids under high pressure. Valve pots readily accessible.



No. 404—Duplex Piston Steam Pump for pressures from 500 to 800 lbs. Valve pots accessible from outside.

No. 407—An especially successful, large-capacity, high-pressure steam pump, heavily constructed for severe service.



No. 1018—A big, powerful member of the Gaso family, designed for main line pipe line use. Available in three sizes—6, 8, or 10x18.

No. 604—Gaso Walking Beam Pump for Gas or Vacuum. For taking gas from pumping well or putting vacuum on well. Built for rough service.

Big Companies Choose Wisely

Note How Many Use Gaso Pumps

Prairie Pipe Line Co.
Sinclair Pipe Line Co.
Texas Pipe Line Co.
Magnolia Refining Co.
Pierce Oil Corporation
White Eagle Oil & Refining Co.
Paragon Refining Co.
Carter Oil Co.
Mammoth Oil Co.
Midwest Refining Co.
Central Pipe Line Co.
Cosden Pipe Line Co.
Humble Oil & Refining Co.
Gulf Pipe Line Co. of Iowa
Standard Oil Co.

and hundreds of others of similar prominence. A list of Gaso customers looks like a blue-book of the oil industry!

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PUMPS industryneed

World Survey of Petroleum Refining

Capacity Far in Excess of Present Production of Crude Oil and of the Existing Consumption of Oil Products. Coming Demand

By Charles E. Bowles

In studying the accompanying list of refineries in various countries throughout the world, it should be kept clearly in mind that in only a few foreign countries does the word "refinery" carry anything like the same meaning that it carries here in the United States.

With us, the refining process means primarily gasoline—with all other products of secondary importance.

In most foreign countries refining means making kerosene for "coal oil lamps" or for heating purposes, paraffin wax for candles and some lubricating oils and greases for their relatively small amount of machinery. We, in the United States, can hardly realize the almost total absence of machinery in all of the countries of the world with less than a dozen exceptions.

Only by "painting in the background" of the widely different industrial, economic and financial conditions in each of the nations and peoples of the world can one get the full significance of oil today—and tomorrow—in speeding the wheels of industry and world development.

During the year 1923 the average production of crude oil in the United States was 2,006,600 barrels per day—of all of the other countries of the world, 785,000 barrels per day. On May 1, 1924, there were 574 refineries in the United States—and, from a concededly incomplete list, there are today about 300 refineries in foreign countries, depending of course, upon where one wants to draw the line on what they will include as a "refinery." The "capacity" of our refineries was slightly over 3,000,000 barrels per day—of all foreign refineries about 800,000 barrels per day.

Refining Capacity

In the year 1923 the world produced, in round numbers, 1,000.000 000 barrels of crude oil and consumed approximately 922,000,000 barrels of petroleum products. In other words, in 1923, the world produced crude oil at an average rate of about 2,800,000 barrels a day—and with a refining capacity of about 3,850,000 barrels a day, it comsumed refined products at an average rate of something over 2,500,000 barrels per day.

If the world's aggregate refining capacity is approximately 3,850,000 barrels a day, the refineries throughout the world could handle 1,400,000,000 barrels of crude oil per year.

As the world production of crude oil in 1923 was 1,019,000,000 barrels, it is obvious that, on paper at least, the present refineries could handle 400 000,000 barrels more crude than the world produced last year.

And as the world consumed about 922,000,000 barrels of petroleum products in 1923 it likewise follows that the world production of crude oil—1,019,-000,000 barrels—was only about 10 per cent greater than the world consumption.

Hence in summing up the world situation, we find that our refining capacity is over 1,000,000 barrels a day greater than our production of crude oil—and that the production of crude oil is over 265,000 barrels a day more than the world consumption of petroleum products.

Expressed in terms of barrels, these totals for daily production and daily consumption are staggering—but with a rapidly expanding market, both at home and abroad, the problem is essentially not one of whether or not the refineries of the United States, or the world, can turn out enough petroleum products to supply the market. The present refineries could turn out 50 per cent more products than the world consumed last year.

Refineries in Mexico

In 1923 Mexico produced an average of almost 410,000 barrels of crude oil a day. She has a dozen large refineries with an aggregate capacity of about

REFINERIES OF THE WORLD

Continent—Country	Area	City	—Refineries— No.	Capacity	*A.D.P.C.O 1923
North America—					
United States	East of Mississippi		146	859,960	110,000
	Mid-Continent		280	855,880	954,700
	Gulf Coast		33	457,100	91,100
	Rocky Mountains		27	107,950	130 600
	California		88	763,900	720,200
		Total	574	3,044,790	2,006,600
Mexico	North	Tampico	5	117.000	241,400
	South	Tuxpam	7	122,500	168,400
Canada			14	48,600	470
Alaska		Katalla	1	150	.....
West Indies	Cuba	Havana	1	1,500	.....
	Trinidad		4	4,000	8,400
		Total	606	3,338,540	2,425,270
South America—					
Venezuela	Lake Maracaibo	San Lorenzo	1	3,000	11,100
Curacao	Island	Willemstad	1	20.000	.....
Colombia	Central	Barranca	1	2,000	1,200
Ecuador	Coastal	Cantivo-Ancon	3	200	130
Peru	Coastal	Talare-Zorritas	3	6.600	15,470
Argentina	Comodoro		16	2,000	9,300
		Total	25	33,800	37,200
Europe—					
Russia	Caspian Sea	Baku	36	.....	.....
	Caspian Sea	Grozny	5	.....	.....
	Black Sea	Krassnodor	1	150 000	.....
	Maikop	Ekitaniodar	1—	150,000	
	Central	Yaroslav	2	2,000	.....
	Baltic	Leningrad	1	250	
	In Caspian Sea	Tcheleken Isl.	1	.....	.....
	Ferghava	Vannofsky	1	750	.....
		Sel-Roxo	1	700—	107,300
Rumania		Near Ploesti	69	70.000	29.800
Poland (Galicia)	South	Drohobycz	39	50 000	14,700
British Isles	England	Southampton	1	5,000	.....
		Bristol	2	.....	.....
		Purfleet	1	.....	8
	Scotland		6	10,000	.....
	Ireland	Dublin	1	.....	.....
	Wales	Llandarcy	1	30,000	.....
Germany	Bavaria	Ratisbon	8	5 000	.....
	Hanover	Hamburg	1—	5,000	.....
France	Alsace	Pechelbronn	1	2,000	1,100
Italy		Rome-Milan	5	3,000	100
Czecho-Slovakia					
Norway-Denmark			7	1,000	200
Austria-Hungary			25	10,100	.....
Belgium-Spain					
		Total	216	339,800	154,103
Asia—					
Persia	Persian Gulf	Abadan	1	70,000	78,000
Mesopotamia	Central	Mosul	1	500	.....
India	Burma	Rangoon	1	5,000	.....
		Digboi	1	10,000	.....
		Punjab	1	1.500	22,800
		Rawalpinde	1	1,500—	22,800
East Indies	Borneo (Sarawak)	Lutong	1	5,000	10,500
	Borneo (Dutch)	Balikpapan	1	15 000	.....
	Java	Wonokromo	1	800	.....
		Tjepoe	1	2,000	.....
		Klantoeng.	1	2,600	.....
		Kapoean	1	250	54,400
	Sumatra	Perlak	1	.....	.....
		Pangkalen	1	10,000	.....
		Pladjoe	..	.....	.....
		Bagoeskoening	2—	5,000	54,400
	Ceram	Boela Bay	1	1,000—	.....
Japan		Echigo	5	3,000	4,900
		Tokyo	1	.....	.....
		Satozake	1	.....	.....
		Total	24	133,150	171,000
Africa—					
Egypt	Red Sea	Suez	2	2,200	2,000
Algeria			..	.....	25
		Total	2	2,200	2,025
Australia—	New South Wales	Sidney	1	5,000	.....
Miscellaneous—			..	.....	200
		Total	1	5,000	200
		GRAND TOTAL	874	3,850,000	2,790,000

*A. D. P. C. O.—Average Daily Production of Crude Oil in 1923.

340,000 bbls. a day, or somewhat less than her daily production. About half of this refining capacity is made up of five plants in the vicinity of Tampico, or the "heavy oil" district. The largest of these, owned by the Doheny interests, is a complete refinery of 45,000 bbls. daily capacity—and 10,000,000 barrels of crude oil storage. The Mexican Eagle (Dutch-Shell) has a topping plant of 30,000 bbls. capacity. The Atlantic Refining Co., one of the old Standard "group," has a 20,000-bbl. plant with 500,000 bbls. of crude storage. The Pierce Oil Corp. has a 12,000-bbl. complete refinery and The Texas Co. a 10,000-bbl. topping plant.

The gravity of the oil from this district runs between 8 and 12 degrees Baume, with almost no gasoline—hence measured in terms of barrels of throughput capacity these refineries are much "larger" than when measured in terms of gasoline recovery.

There are a half-dozen large refineries in the Tuxpam-Port Lobos district with an aggregate capacity of over 120,000 bbls. a day. The "Agwi" interests (Atlantic, Gulf and West Indies Co.) have an 8,000-bbl. topping plant at Port Lobos. Here The Texas Co. has a 10,000-bbl. plant and the Island Oil Corp. a 5,000-bbl. plant. The Pierce Oil Corp. has a little 500-bbl. complete plant at Vera Cruz. The Mexican Eagle (Dutch-Shell) has an 11,000-bbl. complete refinery at Minatitlan. At Puebla Viejo the Standard of New Jersey has a 13,500-bbl. topping plant while the Huasteca Petroleum Co. (Doheny interests) have a 75,000-bbl. topping plant at the same place.

The oil in the south, or "light" oil fields of Mexico ranges around 20 degrees Baume, and contains 10 to 15 per cent gasoline, with more by cracking.

Taking the Mexican refining situation, as a whole, it is obviously in the hands of a relatively few very large and very powerful companies. The Doheny interests have refineries in both the heavy and light oil areas—a total of 120,000 bbls. a day. Likewise the Mexican Eagle (Dutch-Shell) with 41,000 bbls. per day. The Standard group is represented by the Atlantic Refining Co. and the Standard of New Jersey—and 33,500 bbls. capacity. The Texas Co. is represented in both areas, with 20,000 bbls. capacity.

Essentially Mexico has been a country of big production—of big producers—of big refineries. The amazing thing is that while Mexico is producing about 150,000,000 bbls. of crude a year she is consuming only about 12,000,000 bbls. of refined products.

The problem confronting the big company operating in Mexico is whether it is more economical to top or refine the oil in Mexico and tanker the products to outside markets or tanker the crude to refineries in other parts of the world.

Most of Mexico's output, whether crude, topped or refined, has found its way to American refineries and American markets, with Europe the next best customer.

Refineries in Canada

Stretching across the southern border of Canada, from Halifax on the Atlantic Coast to Vancouver on the Pacific Coast, is a chain of six strictly modern refineries with an aggregate capacity of 42,800 bbls. They belong to the Imperial Oil Co., Ltd., the Canadian subsidiary of the Standard of New Jersey. The Halifax refinery, of 12,000 bbls. capacity, gets its crude by tanker from the Gulf Coast and Mexico. The 6,000-bbl. plant at Montreal also gets its crude by tanker. The 12,000-bbl. plant at Sarnia, just across the border from Port Huron, Mich., gets its crude by pipe line from the Mid-Continent. The 4,500-bbl. plant at Regina in Saskatchewan and the recently completed 4,500-bbl. plant at Calgary in Alberta get their crude by tank car from Wyoming and Montana. The plant at Vancouver in British Columbia is 3,800 bbls. capacity and gets its crude principally from Peru in South America.

There are three independent refineries aggregating 5,000 bbls. capacity, with several small plants, ranging from 100 to 500 bbls. a day.

The production of crude oil in Canada, in 1923, averaged 470 bbls. a day. It is estimated that, last year, Canada consumed a total of about 17,000,000 bbls. of crude petroleum products, or an average of about 47,000 bbls. a day. The total refining capacity of the six standard refineries is 42,800 bbls. a day—hence it is obvious that the Standard of New Jersey, through its subsidiary (Imperial Oil Co.) is easily the dominant factor in the oil situation in Canada.

South American Refineries

Also incorporated in Canada, is the International Petroleum Co., Ltd., another subsidiary of the Standard of New Jersey, which however, operates in South America. With the exception of the very valuable holdings of the Dutch-Shell in the Maracaibo Basin area in Venezuela, the Standard of New Jersey, through its subsidiary, is easily the dominant factor in South America. The Tropical Oil Co. pioneered development work in Colombia on the De Mares concession on the upper course of the Magdalena River about 400 miles from Cartagena on the coast of the Caribbean Sea, on the north. A 2,000-bbl. complete refinery has been built at Barranca, near the producing wells whose output last year averaged 12,000 bbls. per day. The imports of refined products into Colombia practically ceased after the Barranca refinery started operations. The Tropical Oil Co. was taken over by the Standard's South American subsidiary in 1920.

Ecuador produced an average of about 130 bbls. of crude a day in 1923—and its three small refineries have a capacity of probably 200 bbls. a day. Ecuador is both a small consumer and a small producer of petroleum products.

The Standard, through its subsidiary, has a strictly modern 5,000-bbl. refinery at Talare, Peru, at which point the Lobitos Co. has a 1,500-bbl. plant. There is a 100-bbl. plant at Zarritas.

As the average production of the Peruvian oil fields was over 15,000 bbls. a day in 1923 and the three refineries have an aggregate capacity of 6,600 bbls. a day, Peru has a crude surplus of over 8,000 bbls. a day, part of which goes to the Imperial (Standard) refinery at Vancouver, Canada, and part of which goes to the Standard refinery at Charleston, S. C.

Sixteen in Argentina

Argentina has a total of 16 refineries which aggregate probably 2,000 bbls. daily capacity. The country produced an average of 9,300 bbls. of crude per day in 1923. With little demand for gasoline—and with its crude oil of low gasoline content—and with no coal in that country, it is only natural that fuel oil would be one of the principal products from petroleum—and would also account for no large complete refineries having been built.

On the island of Curacao, just off the mouth of Lake Maracaibo, Venezuela, the Dutch-Shell has built a 20,000-barrel strictly modern refinery. They also have a 3,000-bbl. refinery at San Lorenzo on the east shore of Lake Maracaibo, adjoining the Mene Grande oil field. The latter is the only refinery in Venezuela today, and the Dutch-Shell is easily the dominant factor in the Venezuelan oil situation as developed to date.

Taken as a whole, South America produced an average of 37,200 bbls. of crude oil a day in 1923. It has about 25 refineries with an aggregate capacity of 33,800 bbls. It is estimated that last year South America consumed an average of about 60,000 bbls. of petroleum products a day, hence it is obvious that the continent is not as yet "self-supporting," from either a producing or a refining standpoint. It seems almost certain however, that South America will shortly produce and export large quantities of crude oil—and that the great bulk of the refining will be done outside South America, just as has been done with Mexican oil.

Refining in Europe

Europe is consuming petroleum products at the rate of about 280,000 bbls. a day. It is producing crude oil, within its own borders at the rate of about 154,000 bbls a day. And it has something over 200 refineries with an aggregate refining capacity of about 340,000 bbls. a day.

In other words, Europe, as a whole, is consuming nearly twice as much in petroleum products as it is producing of crude oil—and it has a refining capacity more than twice as great as its crude production. With four times the population of the United States, Europe produces one-thirtieth as much crude oil and consumes one-sixth as much of petroleum products.

Russia is producing half as much oil as it produced 25 years ago—Rumania's output is 25 per cent less than it was a dozen years ago—Poland (Galicia) is producing less than half as much as it produced 15 years ago. And these three countries account for practically all of the crude oil produced in Europe.

And obviousiy, as the refineries were built years ago to take care of a much larger production than there is today, the refinery capacity is far in excess of the present available amount of crude oil—with the exception of Russia.

In 1923 Russia produced an average of 107,300 bbls. of crude oil a day—it has about 50 refineries with an aggregate capacity of probably 155,000 bbls. a day. The heart of the refining area is at Baku, the heart of the producing area. Without attempting to itemize the refineries of the various companies in the various cities of Russia, this one fact is outstanding—the Russian refineries are not operated primarily to make gasoline, but to make kerosene, greases and waxes.

Nothing could more clearly emphasize the present industrial condition of Russia than the basis upon which its refineries are operated. In 1923 Russia produced 39,000,000 bbls. of crude oil and, with a population of 120,000,000, consumed about 27,000,000 bbls. of petroleum products, compared with over 600,000,000 bbls. consumed by the United States.

Rumania has 69 refineries with an aggregate capacity of 70,000 bbls. a day and about 30,000 bbls. a day of crude oil production. The destruction of Rumania's refineries and oil fields during the World War is still vivid in everyone's memory—and the marvel is that this little nation has been able to get her petroleum industry back on its present basis.

The same general situation applies to Poland with 15 large refineries and probably two dozen small ones with an aggregate capacity in the neighborhood of 50,000 bbls. In 1923 the Galician fields produced an average of less than 15,000 bbls. a day.

Shale Refining in Scotland

The refining industry had its birth in Scotland several years before the crude oil industry had its birth in Rumania in 1857 or in America in 1859. In the search for a new source of supply for a burning oil for illuminating purposes, Dr. James Young experimented with an oil seepage from a coal mine—and the oil that he refined from it was "coal" oil, in fact, as well as in name. From his first simple experiments with oil from coal, the refining process was applied to oil obtained from the retorting of shale and the business of making illuminating oil from oil from coal and from shale had developed to a considerable extent before crude petroleum from wells was available.

And so, in Scotland today, there are a half-dozen refineries most of which still operate on oil obtained from shale, while the others operate on "well oil."

In Southampton, England, a 5,000-bbl. refinery has recently been completed. There are two plants at Bristol and a cracking plant at Purfleet, east of London, on the Thames.

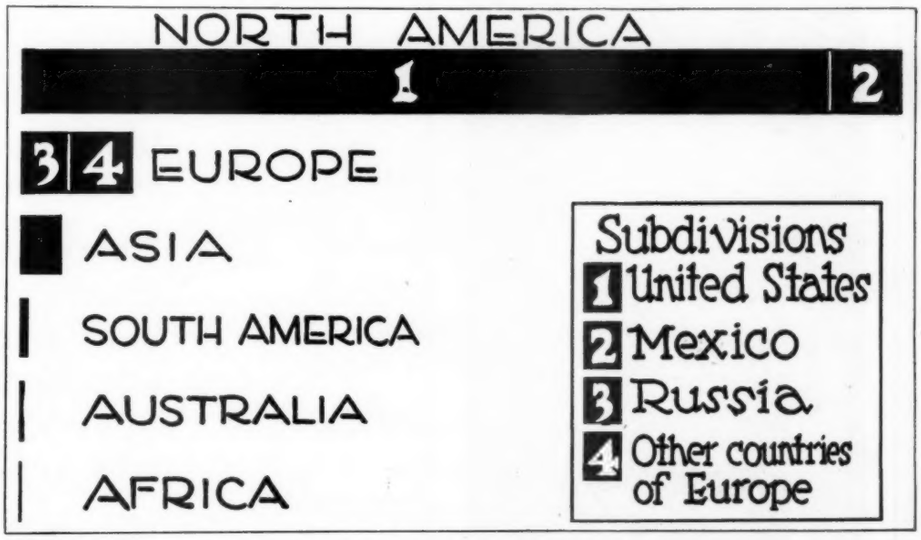
England's Great Refinery

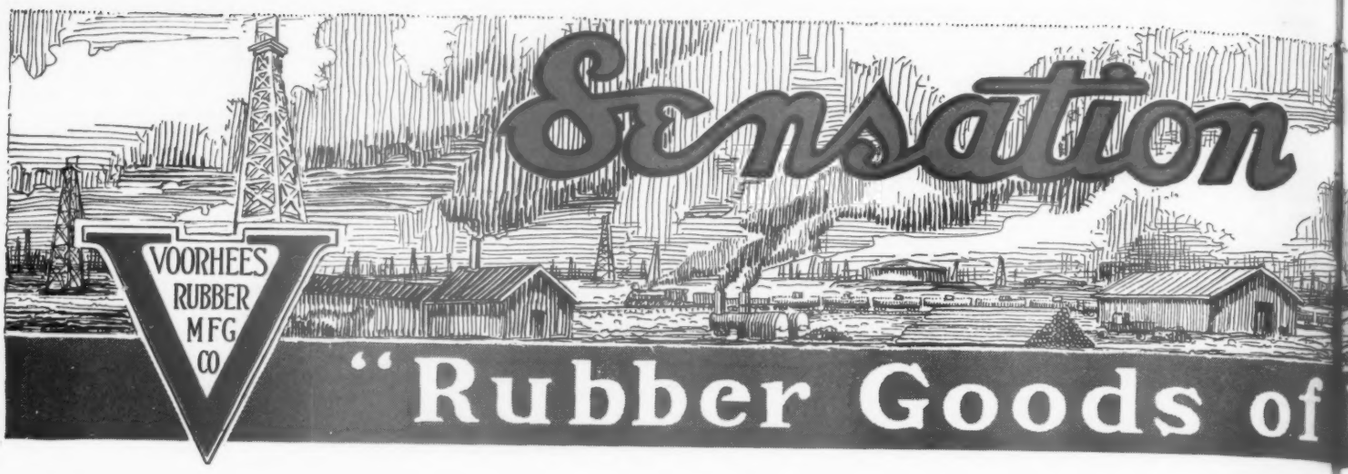
England's great refinery, however, is at Llandarcy, near Swansea, in Wales, and when the original plans are finally carried out will have a capacity of 30,000 bbls. a day. It is a complete refinery—strictly up-to-date—and operates on crude from Persia.

With a consumption of 100,000 bbls. of petroleum products a day—and with practically no production except a few thousand barrels a day of shale oil in all of England, Scotland, Ireland and Wales, one can readily understand why the British Government has given more than simply its "moral support" to British companies seeking for oil in foreign lands.

(Continued on Page 150-B)

REFINING CAPACITY OF THE WORLD





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at the end," and that is what really counts, THE ULTIMATE ECONOMY.

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Sensation Belt is stronger, more flexible, stands the weather better and, of course, outlasts ordinary belts.

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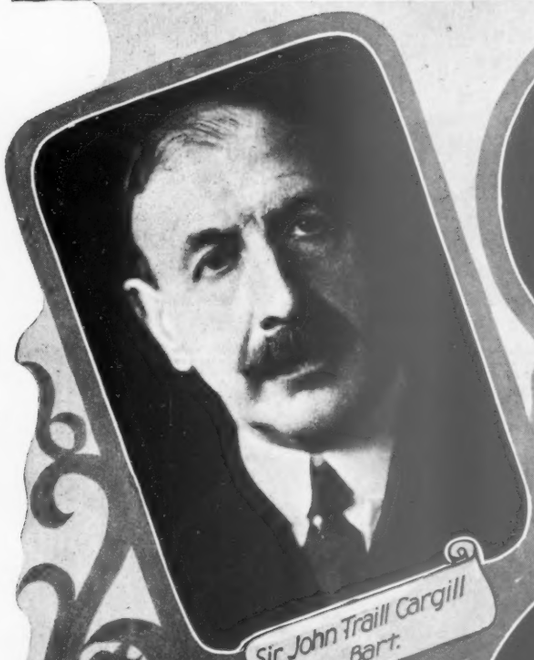
THE BRIDGEPORT MACHINE COMPANY

General Offices & Works WICHITA, KANSAS

Men who direct the Anglo-Persian



Sir John Traill Cargill Bart.

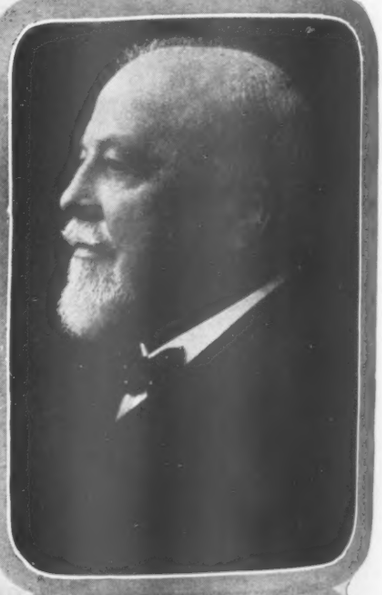
Sir Edward H. Packe K.B.E.
Photo © Elliott & Fry, Ltd.

Sir Charles Greenway Bart.
Photo © F.A. Swaine

Lord Inchcape

Sir John Cadman K.C.M.G.
Photo © F.A. Swaine

Sir Frederick William Black K.C.B. etc.



Admiral Sir Edward John Warre Slade, K.C.I.E. K.C.V.O. etc.

British Government Interested in Oil

Prominent Leaders in Different Activities Manage Affairs of Anglo-Persian Co. The Change From Coal to Fuel Oil

OIL AS FUEL FOR BRITISH NAVY

Oil fuel as against coal for the British Navy was a mooted question several years before the World War, and one of enough importance to make or break party prestige. The halls of the House of Commons rang with some furious oratory devoted to this subject.

Lord Fisher, when First Lord of the Admiralty, was a pioneer advocate of oil fuel. Lord Strathcona was another.

William Knox D'Arcy, who secured the original concession in Persia in 1901 and found a supply of oil there, was thereby responsible for much of the debate hinging around Persian oil. Britain wanted an oil supply and one as close as possible to home, before it forsook its bountiful domestic coal deposits as a feeder for the boilers of its war fleets.

At a critical period in D'Arcy's affairs in Persia he received a flattering offer from German interests. He turned it down for patriotic reasons and managed to interest Lord Strathcona, the dominating figure in Burma Oil. Out of this connection grew the Anglo-Persian Oil Co.

When Winston Churchill became First Lord of the Admiralty he took up the fight for a naval oil supply. We have some notes on an exhaustive statement made by Churchill in the House of Commons on July 17, 1913, in which he pointed out the imperative need of an Admiralty policy that would assure oil supplies at reasonable cost.

Four years before, the first flotilla of ocean-going destroyers wholly dependent upon oil had been created. Each successive year another flotilla of "oil only" destroyers had been built. At the time he spoke there were built or building over 100 destroyers solely dependent on oil fuel.

Furthermore, oil was being employed in coal burning battleships and cruisers to enable them to realize their full powers in an emergency. But mainly the British Navy continued to be reliant in coal, oil only being required when exceptional speed had to be reached with a vessel of exceptional quality.

Thus is seen the beginning of oil usage by the British Navy. The World War removed all doubts; in fact, forced the issue in favor of oil. Today 90 per cent of the British naval fleet is oil burning.

Churchill said that the ultimate policy was that the Admiralty should become the independent owner and producer of its own supplies of liquid fuel and become the owner or at least the controller at the source of at least a proportion of the supply of natural oil which it would require. He said:

"We are moving towards that position of independence outside the oil market which it is our ultimate policy to secure." He referred to Persia.

* * *

SIR CHARLES GREENWAY

All of which is introductory to Charles Greenway —now Sir Charles Greenway. Sir Charles sold the British Government its controlling interest in the Anglo-Persian Oil Co. It was due to his persuasion in 1914 that the Government bought into oil.

He had succeeded to the chairmanship of the board of the Anglo-Persian Oil Company upon the death of Lord Strathcona, having previously been managing director.

He conceived the idea of having the Government take a large interest in the Anglo-Persian. This would secure an adequate supply of oil for the Navy and at the same time would produce the necessary capital for exploitation without surrendering any rights to foreigners.

The Admiralty appointed a commission to examine the Persian concession. Admiral Slade and John Cadman—now Sir John—were members. The commission reported favorably. Memorable support for acquisition was rendered by Churchill and Sir Edward Grey, then Secretary of State for Foreign Affairs.

The Bill for Acquisition of Capital in the Anglo-Persian Oil Company passed through Parliament. It received the royal assent on August 10, 1914, or six days after England entered the World War.

Sir Charles Greenway gave the British Nation an investment of enormous potentiality, and of immediate appreciation probably far in excess of anything he could have dreamed.

It has proved to be of greater importance and of far more remunerative character than that of the Suez Canal.

Sir Charles Greenway, Baronet, is a senior partner in the firm of Messrs. Shaw, Wallace & Company, bankers and merchants of Calcutta, Bombay, Karachi, Madras, Cochin, Marmagoa, Tuticorin, Colombo and Aden; and of Merrs. R. G. Shaw & Company, of London and Dundee.

His interests in the oil industry embrace the chairmanship of the Anglo-Persian Oil Company, Ltd., the British Petroleum Company, Ltd., the Homelight Oil Company, Ltd., the British Tanker Company, Ltd., the Petroleum Steamship Company, Ltd., the National Oil Refineries, Ltd., Steaua Romana (British), Ltd., the Bakhtiari Oil Company, Ltd., the First Exploitation Company, Ltd., the D'Arcy Exploration Company (Ltd.), the Persian Railways Syndicate, Ltd., and the Persian Mining Syndicate, Ltd.

Sir Charles is also a London Director of the Burmah Oil Company, Ltd., and a director of Scottish Oils, Ltd., North Persian Oils, Ltd., Turkish Petroleum Company, Ltd., the Societe Generale des Huiles de Petroles (vice president), the Tanker Insurance Company, Ltd., and of various other companies.

Sir Charles went to India in the year 1885, and retired thence in 1908. During that period he played a considerable part in the industrial development of that country, more particularly in the production of coal, oil, tea and cotton goods, and the firms with which he is associated have also been largely concerned in the import and export trades of India and the Persian Gulf.

Since his return to England he has occupied a prominent position in London banking and mercantile circles. He has more particularly concentrated his attention on the foundation and development of the Anglo-Persian Oil Company, Ltd., now one of the most important assets of the British Empire, and of its numerous associated companies, and in the promotion of British commercial and industrial interests generally in Persia and Mesopotamia.

The various industrial and other companies and firms, in the administration of which he is concerned, are estimated to give employment to more than 150,000 people.

The honor of a baronetcy was bestowed upon him in 1919 by His Majesty the King in recognition of valuable services rendered by him to the country during the war; and the decoration of Grand Officer of the Order of the Lion and Sun has been conferred on him by H. I. M., the Shah of Persia, for services rendered to that country.

* * *

ADMIRAL SIR EDMOND JOHN WARRE SLADE

With a distinguished record in the British Navy which includes suppression of the gun runners in the Persian Gulf, Admiral Slade's present connection with the Anglo-Persian Oil Company comes as a culmination of long association with the development of the Persian oil fields and with the company in various capacities.

Admiral Sir Edmond John Warre Slade, K. C. I. E., K. C. V. O., etc., is the vice president of the Anglo-Persian Oil Company, Ltd., and a member of its finance committee. The companies in which he is also a director include the following:

The Bakhtiari Oil Company, Ltd., the British Petroleum Company, Ltd. (the distributing organization of the Anglo-Persian Oil Company), the British Tanker Company, Ltd., Britannic Estates, Ltd., the D'Arcy Exploration Company, Ltd., the Fanti Consolidated Mines, Ltd., the First Exploitation Company, Ltd., the Homelight Oil Company, Ltd., the Persian Railways Syndicate, Ltd., the Petroleum Steamship Company, Ltd., South West Africa Company, Ltd., Tilbury Contracting & Dredging Company, Ltd., Zambesia Mining Development, Ltd., and chairman of the United Service Transport Company, Ltd.

Admiral Slade was educated at Eton and entered the British Navy in 1872. He became a lieutenant in 1879, was promoted to commander in 1894 and to captain in 1899.

He was captain of the Royal Naval College, Greenwich, and head of the Naval War Course, 1904-1907, during which time he originated and organized, in conjunction with Lord Rawlinson, who was then commandant of the Military Staff College, an interchange of lectures and a short yearly course of joint instruction for the naval and military establishments. He also persuaded the British Admiralty and War Office to agree that a certain number of naval and military senior officers should attend the courses regularly at the Staff College and Naval War Course, respectively—which resulted in great benefit to both services as was fully proved in the recent war.

Admiral Slade become director of Naval Intelligence at the Admiralty, 1907-1909, being promoted to flag rank in 1908.

He was commander-in-chief of the East Indies, 1909-1912, when he was instrumental in suppressing the activities of the gun runners in the Persian Gulf, finally bringing about the ruination of that trade as practiced from Muscat.

Admiral Slade was the head of the commission sent to Persia by the Government in 1913-1914, to report on the Anglo-Persian concession and when the Government decided to join the Anglo-Persian Oil Company, became one of the first Government representatives on the board of directors.

During the war he was employed at the Admiralty, mainly on committee work, dealing principally with the restriction of enemy supplies, war trade, and with prize matters generally.

On retirement from the service in 1917, he relinquished the post of Government director of the Anglo-Persian Oil Company, and became an ordinary director of the company, subsequently being elected to the vice chairmanship.

* * *

SIR JOHN CADMAN, OIL DIPLOMAT

In a biography limited as to length such as the impending, the subject, Sir John Cadman, K. G. M. G., D. Sc., etc., defies adequate treatment. His eminence, which is not only collective but also decidedly quantitative, puts a strain of selection upon the suffering biographer that is positively unfair.

Sir John Cadman is above everything a talented diplomat, besides being one of the world's foremost authorities on oil. Appearing in America in 1921 in an unofficial but none the less ambassadorial capacity when international questions of vital issue between the United States and Great Britain were at stake, he delivered an important address at the annual meeting of the American Petroleum Institute in which he said:

"The world is at the moment calling for international understanding and in this most important industry, greater knowledge and understanding of the complex problems are necessary. A responsibility rests upon every one of us from which we dare not shirk."

Previously well known to oil men in this country who cooperated with the Allies in the matter of

(Continued on Page 201)

In the frozen
Clark Compres

Royalite Oil Company (Imperial Oil, Ltd.) compressor plant at Black Diamond, Alberta, Canada

Clark Brothers Company

Olean, New York

Manufacturers of Gas Compressors and Drilling Engines

SALES AGENTS

GAS ENGINEERING & CONSTRUCTION COMPANY

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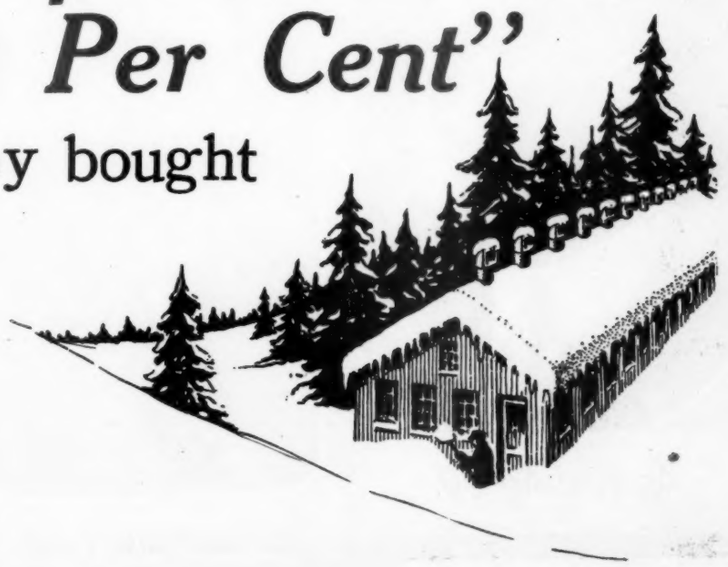
farthest north essors again win!

4,000 feet above sea level, in the foothills of the Canadian Rockies where the temperature drops to 50° below! The farthest north and most isolated plant in North America!

Mr. Sam Coultice, Superintendent, (the gentleman with the Fedora hat) said, that despite the widely varied weather conditions which they have to contend with

"Clarks Operate Better Than 99 Per Cent"

That is why they bought six more after operating the original installation of six units for three years.



Officials of Shell Transport & Trading Co.

The Royal Dutch and Shell Companies

Men Noted for Their Achievements Form Directorate of These Two Internationally Prominent Concerns

Lord Bearsted, formerly Marcus Samuel, founder of the Shell Transport & Trading Company, now affiliated with the Royal Dutch Company, the two organizations forming the main part of the Royal Dutch-Shell group, has played a leading role in British oil enterprise.

LORD BEARSTED, FOUNDER OF THE SHELL CO.

A life crowded with achievements, a mere summary of his activities includes wide travel and commercial development in the Far East and notably in Japan, the development of large oil fields in the Far East and a conspicuous part in the organization and perfection of vessel transport for oil. He introduced the transport of petroleum in bulk through the Suez Canal. During the World War he is credited with having conceived the plan of shipping oil in the holds of cargo vessels, which resulted in a large movement when oil was most needed.

Lord Bearsted was born November 5, 1853. He entered the firm of M. Samuel & Company, international merchants, which had been developed from a small curio shop in London. The story goes of the Samuel children on a holiday at the beach at Margate picking up empty shells and fashhioning a box, which gave the elder Samuel the idea of shell-covered boxes that became quite an item of trade in his little shop. The shell has been an identifying mark of Lord Bearsted's oil activities.

When the present Lord Bearsted entered the firm of M. Samuel & Company the business had developed into large proportions, with buyers in the Far East and branches in the Dutch East Indies and elsewhere. It had carried on important financial transactions with the Japanese Government and had become merchandisers of oil.

Toward the close of the 80s Marcus Samuel formed the Dutch Indies Industrial & Trading Company, under a Dutch charter, to take over the Menten oil and coal concession in Borneo, having the support of the Rothschilds, who henceforth were identified with its constantly expanding operations.

The firm of M. Samuel & Company concentrated more and more on the merchandising and carrying of oil, and became interested in the early development of the tanker. In 1892 it built and launched the Murex, the first tank steamer to voyage through the Suez Canal with bulk oil. This began the vast Shell fleet, operating on every sea.

All the while the Samuel organization was acquiring and absorbing subsidiary oil concerns. In 1897 the Shell Transport & Trading Company was formed, and Sir Marcus Samuel, as its managing director, has been the most conspicuous figure in its expansion into one of Britain's leading petroleum companies. In 1907 Sir Marcus Samuel and Sir Henri Deterding brought about the affiliation of the Shell Transport & Trading Company and the Royal Dutch Company, resulting in what has grown into the world's greatest oil combine.

Lord Bearsted has held many important state offices. He has been an alderman of the City of London since 1891, was a sheriff from 1894 to 1895, and lord mayor from 1902 to 1903. He was knighted in 1898 for services rendered to H. M. S. Victorious, received a baronetcy in 1903 and a peerage in 1921 for "eminent public and national services." He received an official vote of thanks from the Lords Commissioners of the Admiralty in May, 1915, for "services of the utmost importance to the fighting forces at the present time."

Lord Bearsted is lord of the Manor of Mote, a deputy lieutenant of the City of London, a grand officer of the Legion of Honor of France, a commander of the Order of Leopold of Belgium, a knight commander of the Order of the Rising Sun and of the second class of the Sacred Treasure of Japan.

He has practically retired from active affairs and his place as chairman of the Shell directorate has been taken by his son, Captain Walter H. Samuel.

* * *

Captain the Hon. Walter Horace Samuel, the eldest son of the first Baron Bearsted, succeeded his father and the founder of the Shell Transport & Trading Company, as chairman in 1921.

CHAIRMAN OF SHELL TRANSPORT & TRADING CO.

He was born March 13, 1882, and was educated at Eton and Oxford. He traveled in the Far East from 1904 to 1906.

During the war he served with the West Kent Yeomanry in Gallipoli, Egypt and France, when he received the Military Cross and was mentioned in despatches.

He succeeded Lord Bearsted as chairman of the Shell Transport & Trading Company in 1921.

* * *

Sir Robert Waley Cohen, K. B. E., is one of the widest known directors of the Shell Transport & Trading Company. He was born September 8, 1877, and received his education at Clifton College and Emanuel College, Cambridge. He became director of the Asiatic Petroleum Company, a subsidiary of the Shell Transport & Trading Company, in 1905.

PROMINENT AS DIRECTOR OF SHELL COMPANY

During the war he was petroleum adviser to the War Office, and came to the United States at the invitation of the Admiralty to advise the British War Mission on Petroleum matters.

He was appointed a knight commander of the Order of the British Empire in 1920.

* * *

Samuel Samuel, a brother of Lord Bearsted, is a long-standing director of the Shell Transport & Trading Company, and has been closely identified with his brother in the development of that company.

PARLIAMENTARY DIRECTOR OF SHELL CO.

He was born in 1855 and lived a considerable time in the East, where he has traveled extensively. He was a member of Parliament for Wandsworth from 1913 to 1919 and has sat for the Putney division of that borough from 1919. He also is a lieutenant of the City of London.

Apart from his directorship in the Anglo-Saxon Petroleum Company and the Shell Transport & Trading Company, he is a partner in M. Samuel & Company (Ltd.), a director of Lloyds' Bank and a member of the Chamber of Shipping of the United Kingdom.

* * *

Andrew Agnew, C. B. E., the latest director on the board of the Shell Transport & Trading Company, was born February 28, 1882. He gained extended shipping experience with Syme & Company in England and Singapore, and was appointed manager of the Asiatic Petroleum Company (Singapore in 1911, this company being a subsidiary of the Shell Transport & Trading Company.

SHIPS, MUTINY AND OIL IN HIS CAREER

During Mr. Agnew's residence at Singaport he was an unofficial member of the Straits Settlements Legislative Council, and during the mutiny in 1915 he was the officer commanding civilians at Singapore, afterwards becoming commandant of the Singapore Civil Guard.

During Mr. Agnew's residence at Singapore he Mesopotamia Rivercraft Committee and a member of the Shipping and Food Control Committee, and was awarded the rank of commander of the Order of the British Empire in 1916.

He was appointed manager of the Anglo-Saxon Petroleum Company in 1920, and a director of the Shell Transport & Trading Company in 1922.

* * *

As a boy of 17, Archibald Scott Debenham, now a director of the Shell Transport & Trading Company, started work in the firm of Lane & McAndrew (now Davies & Newman), London oil brokers. After going through the various departments he became private secretary to the senior partner, F. Lane.

SHELL DIRECTOR STARTED AS OIL BROKER

Mr. Debenham joined the Asiatic Petroleum Company in 1908, becoming manager shortly afterwards. He was made a director in 1921. He was born October 17, 1877.

* * *

Sir Henri W. A. Deterding, K. B. E., sits at a semi-circular desk on the fifth floor of a modern office building in St. Helen's Court, Great St. Helen's, just off Bishopsgate, in the financial district of London, a stocky man of about 60, with close-cropped gray hair, alert black eyes, whose swarthy face suggests the Oriental.

MASTER MIND OF ROYAL DUTCH COMBINATION

The master mind of the Royal Dutch Combination, and as the most powerful single force in the petroleum business, Deterding has been called the Napoleon of Oil. His story is the story of the Royal Dutch.

Mr. Deterding was assistant manager for the Netherlands Trading Company at Penang when August Kessler was developing the original Royal Dutch Company, and first got in touch with him. In 1896 Kessler engaged him as inspector, and he displayed such ability in all departments of petroleum enterprise that his rise in the expanding organization was rapid.

Deterding is the son of an obscure Amsterdam sea captain. Shortly after leaving public school he became a messenger in the Twentsche Bank, of Amsterdam, and worked his way to a chief clerkship At 20 he broke away from the banking clerkship, and in 1886 went to the Netherlands East Indies for the Netherlands Trading Company. He was first stationed at a remote post at Deli, where he had his first experience with selling oil in the form of kerosene. He attained the position of agent at Penang for the trading company.

When the Twentieth Century dawned, the oil business in the Dutch Indies was on a par with the industry in Pennsylvania in the early 60s. For some years J. B. August Kessler, half Dutch and half German, had been studying oil possibilities of the East Indies. He was director of the firm of Friedman van Kerchem, which traded in Dutch East India products, with headquarters at Batavia.

Convinced of the world's future need of oil, and satisfied Sumatra, Borneo and Java had a sufficient store, he organized, at The Hague in 1890, the Koninklijke Nederlandsche Maatschappij Tot Exploatatie Van Petroleumbronnen in Nederlandsch Indie (Royal Dutch Company for the Working of Petroleum Wells in Dutch East Indies).

The initial capitalization was 1,300,000 gulden, or about $520,000. The company acquired the original De Ruyter Zylken Sumatra concession for what then amounted to $150,000. This was the first transaction of the Royal Dutch, which today owns, controls or is affiliated with 125 different companies throughout the world, whose total capitalization is nearly $1,000,000,000.

Soon after the incorporation, Kessler was made managing director and the Kessler policy began. It was summed up in the one word "absorption." He began to annex small retail oil companies and to carry on exploration and exploitation in the

(Continued on Page 198)

THE NAME IS A LUCEY GUARANTEE

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To our Present and Future Friends:

Gentlemen:

When you buy any piece of equipment with the name "LUCEY" on it, you are buying what we sincerely and honestly believe to be the best that can be made.

Every man in the LUCEY Organization is striving but for one objective - to make LUCEY products, whether they be bits, engines or what not - the finest of their kind ; dependable, well designed and well made.

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We are not standing still - we are going ahead rapidly - new channels of distribution are being opened up; our plants at Chattanooga and Houston are working hard - our engineers are progressive.

This Company solicits your business;welcomes your inquiries and will strive hard for your good-will.

Yours very truly,

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President

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Wherever there's Oil

YOU CAN BUY LUCEY PRODUCTS

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GENERAL SUPPLY COMPANY - - - - - CASPER, WYO.

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"Wherever there's Oil"

These men direct the Royal Dutch Co.

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SPECIAL SECTION

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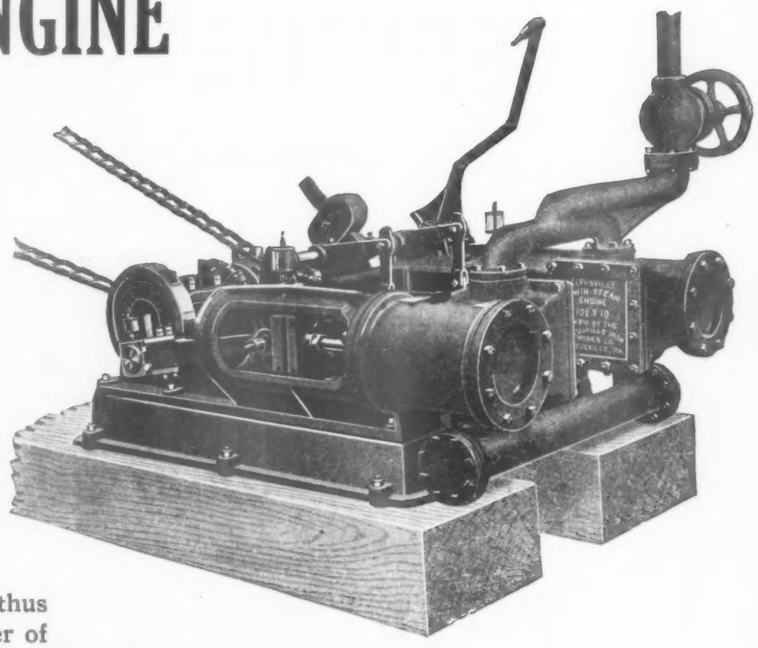
2 Rector Street
NEW YORK

CONTINENTAL

TITUSVILLE TWIN CYLINDER DRILLING ENGINE



In economy, efficiency and safety, the Titusville Twin Cylinder Drilling Engine—built with reserve ruggedness—is the most advanced type of drilling engine yet included in modern rotary drilling equipment.

Its steadiness and flexibility of operation relieve stress on the rotary and drawworks, hence adding to their life and usefulness; reducing the upkeep and necessity for repairs. Constructed without a fly-wheel the engine does not rack itself to pieces through excessive speed, thus reducing to a minimum the danger of breaking a drive chain or twisting off the drill pipe.

Regularly equipped with a steam manifold, exhaust manifold throttle, lubricator, oil and grease cups, wrenches and split driving sprocket. Unless otherwise ordered each engine is equipped with a 12 tooth semi-steel split driving sprocket for No. 1240 chain.

"Rough Rider" Heavy Duty Rubber Belting

The Continental Supply Company's "ROUGH RIDER" Rubber Belting was especially designed to meet oil industry conditions after engineers had spent months in the fields studying the requirements for a belting that would stand the exceptionally severe service.

This belting is made of the best quality duck that can be had, and the very best quality of rubber is used between the plies and for the cover.

A special feature is the interstitching of the plies with a "lock" stitch that prevents any pulling loose or unravelling of other stitches if one should be broken.

ROUGH RIDER Belts are covered with an exceedingly tough rubber which will resist abrasion and weather. They will be found to give exceptional service for drilling, pumping, or wherever a heavy duty belting is needed.

If Continental Sells It There Is No Better

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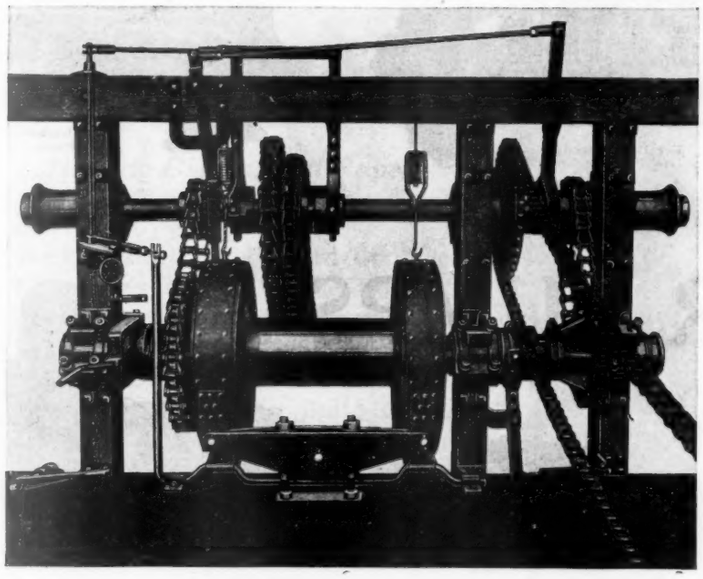
TITUSVILLE ACME NO. 6 ROTARY RIG



Drawworks

The Titusville No. 6 all-steel-construction Drawworks represents the last word in modern design, efficiency, and ease of operation.

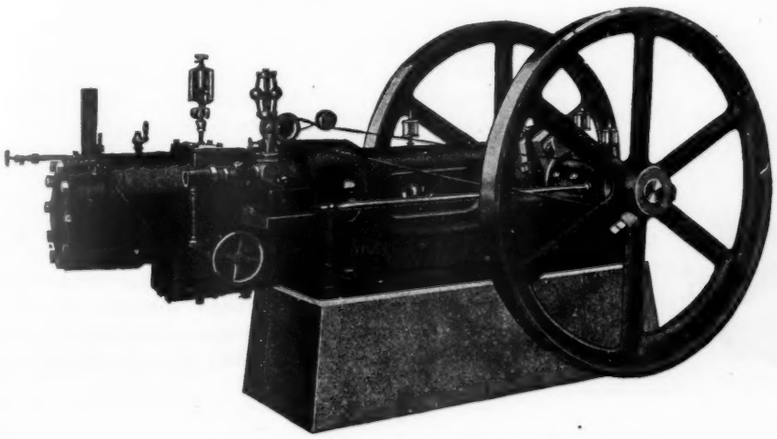
This Drawworks provides four speeds for the drum and two speeds for the rotary.

Two features of value are its brake equalizer and its non-speed drum.

Rotary

The Titusville Acme Steel Rotary has been proved by years of satisfactory service in every important Rotary field of the world. Among its many advantages are the replaceable race plates of machined high carbon steel with which both Rotary table and base are fitted. Cones are of case hardened machinery steel, and run in an oil bath. Pinion shaft is large in diameter with renewable bronze bushed oil bearings.

TITUSVILLE "TICO" GAS ENGINES



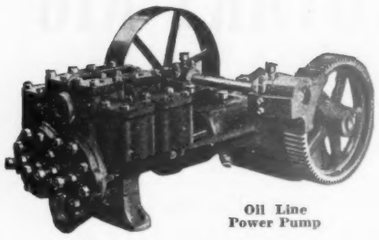
The Titusville "Tico" Gas Engine has been developed to meet the exacting requirements of oil industry use, and is today in wide use throughout the industry and giving utmost satisfaction to users.

The horse power developed during sustained pulls under trying conditions has been more than 100% over rated capacity. It is offered in 20, 25, 30, 40, 50 and 60 horse power sizes.

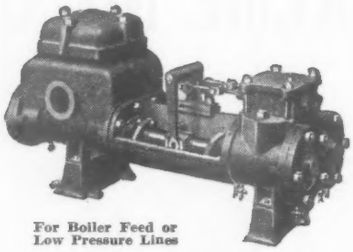
Reserve strength, flexibility, accessibility and simplicity are features of this engine.

If Continental Sells It There Is No Better

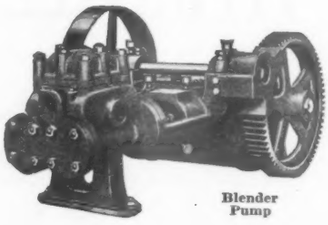
CONTINENTAL



Oil Line Power Pump



For Boiler Feed or Low Pressure Lines

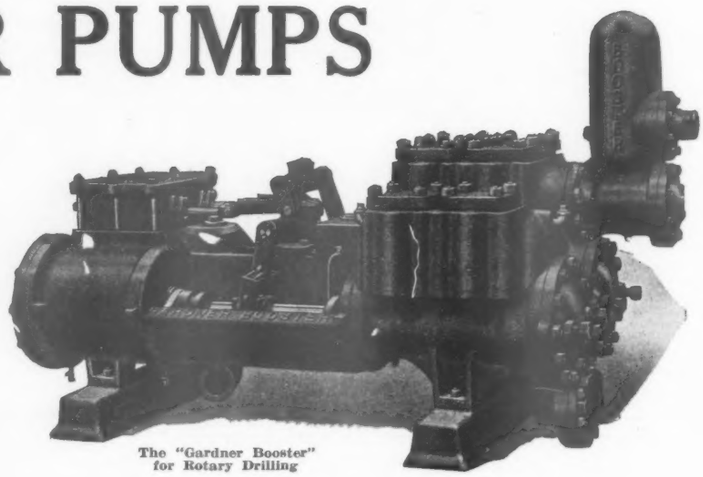


Blender Pump

GARDNER PUMPS

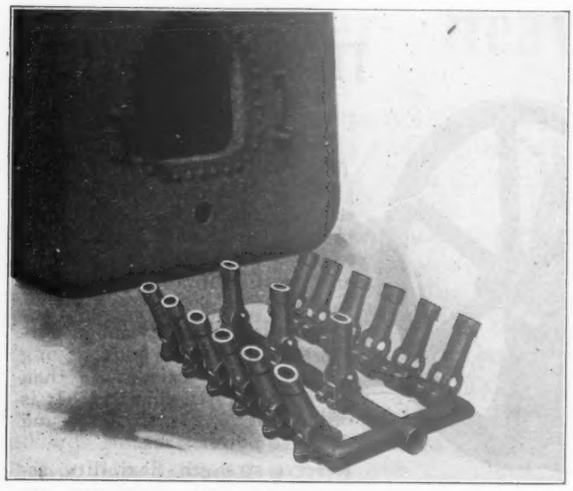
The World's Best

The Gardner Governor Company is one of the world's oldest and largest makers of pumps, and their products are widely used throughout the Oil Industry. The market affords no finer, sturdier or more durable pumps. A full line is offered, including Slush Pumps, Pipe Line Pumps, Blender Pumps, Power Pumps, Boiler Feed Pumps, and Compressors.



The "Gardner Booster" for Rotary Drilling

CONSERVO LOW PRESSURE GAS BURNERS



More Heat—Lower Gas Consumption

One drilling contractor writes: "When we were put on low pressure gas we tried several burners, but could not keep up steam enough to drill with. We got one of your burners, and it more than paid for itself the first day. We have had no trouble in keeping all the steam necessary."

The CONSERVO is the perfect low pressure burner, insuring proper mixing, complete consumption, and thorough distribution of heat. Maximum steam possible is secured from your boilers, yet with lower gas consumption.

If Continental Sells It There Is No Better

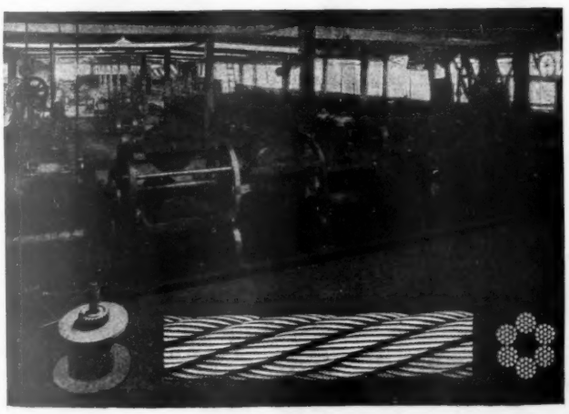
CONTINENTAL

NEW BEDFORD CORDAGE

Drilling Cables, Bull Ropes, Torpedo Lines

Back of the New Bedford Cordage Company's slogan, "None Better," lies three-quarters of a century of experience in rope making. New Bedford Drilling Cable, Plain Laid Rope, Manila Rope, Bull Ropes, Torpedo Lines are unexcelled for strength, durability and dependability.

BLACK WIRE LINES



View in the Black Steel & Wire Co. Plant

For Every Oil Field Need

Black Wire Lines are made in one of the world's most modern wire rope plants, that of the Black Steel & Wire Company, at Kansas City, Missouri, and are offered in all of the styles and sizes which have proved practical for oil industry work.

For both rotary and cable tool drilling the 6x19 line is in practically universal use. This line is offered in three grades of steel, namely, Crucible, Mild Plow, and "Regular." Of these, the "Regular" is the most popular and is especially recommended.

The 6x7 line in the smaller diameters is the popular style for sand lines.
Black Wire Lines have been used consistently by our customers for many years and have given utmost satisfaction.

If Continental Sells It There Is No Better

CONTINENTAL

THE SPIRAL STEM

and Spiral Rotary Drill Collar

Spiral Rotary Drill Collar

Spiral Stem

The Spiral Stem (for cable-tool drilling) is an invention by a practical drilling contractor offering 14 important advantages over the old-style augur stem that it supplants.

Records in "crooked-hole" territory prove conclusively that the Spiral Stem actually eliminates crooked holes. *Filling the hole* (with the grooves of the spirals acting as waterways) it exerts its blows in a straight-downward direction regardless of boulders and other obstacles which cause ordinary loose-fitting augur stems to shift to the side and start crooked holes.

The SPIRAL ROTARY DRILL COLLAR gives to *rotary* holes the same advantages that the Spiral Stem gives to cable-tool holes. Both tools are made of *forged steel,* having wonderfully long life. Both are fully patented.

MONTGOMERY SPRING CASING HOOK

An improved and absolutely safe hook offering advantages of decided importance. The Montgomery is convertible at will from a rigid and nonrotating hook to (1) a spring-yieldable, rotating, double-swivel hook and (2) to a spring-yieldable, double-swivel, non-rotating hook.

The Montgomery is the strongest hook made. It lifts the pipe so gently that the saving in casing threads alone usually pays for the hook. Ingenious oiling system keeps parts fully lubricated and yet needs practically no attention.

MONTGOMERY FLEXIBLE CASING SLIP

Light enough to be easily handled and yet strong enough to stand the worst sort of abuse. *Chrome alloy steel* construction. Extra-long slips provide greater gripping surface. Long, easy-to-grab handles make manipulation easy. Special feature allows use without adapter. Adjustable circumferentially to take care of pipe irregularities, thus preventing damage to pipe. Practical, efficient and long-lasting. Folder on request.

7

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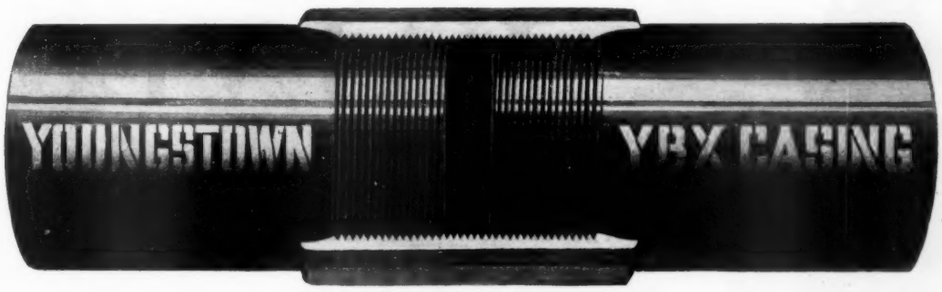

YOUNGSTOWN TUBULAR GOODS

Drill Pipe—Drive Pipe—Casing—Tubing—Line Pipe

The Youngstown Sheet & Tube Company is one of the world's largest makers of tubular steel products. A complete line of pipe is offered for Oil Industry use, the greater portion of the pipe made on twenty-two tube mills operated by this company being used in the Oil Industry. This pipe goes to every important field in the world, and is rendering dependable, satisfactory service in all of them.

"Youngstown" Pipe is manufactured under conditions assuring every possible advantage in Quality, Quantity and Shipment. It is made from the company's own steel, selected for this purpose from an output of millions of tons per year. Every facility of long experience and research is devoted to its welding, threading and finishing. Back of it is a policy of more than twenty years standing that requires the most advanced design as well as the most thorough test and inspection at every point. The company has large modern plants in both the Youngstown and Chicago Districts.

"Copperoid" Pipe—Resists Corrosion

In furtherance of the Youngstown policy of effectively meeting every oil field condition, the company has developed Youngstown COPPEROID Pipe for use on properties where bad water, acids, etc., are encountered.

COPPEROID Pipe will resist corrosion longer than either steel or iron pipe, and is especially recommended for line pipe. It is offered in all sizes and weights which are obtainable in black steel pipe and at only a very slight advance in price.

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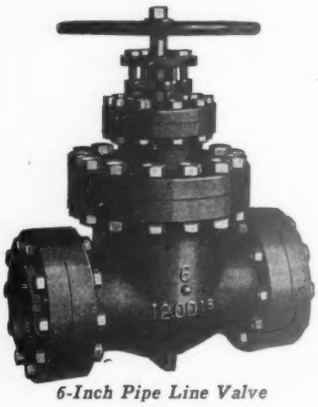
Special Steel Drilling Gate

WESTCOTT VALVES

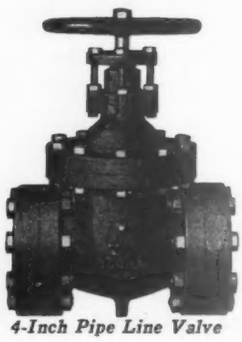
Built ONLY for the Oil Industry

The Wescott Valve Company has specialized in building valves for the Oil Industry only, and has been rewarded for pioneer service in this field by a demand for its product which has placed it, in five years, distinctly in the lead. They are becoming known throughout the Industry as "The Pipe-Line People."

The Westcott line includes valves of every size and every pressure required for pipe line and refinery use, as well as a complete assortment of Special Steel Drilling Gates. The name "WESTCOTT" on a valve may be taken as the symbol of a mechanical product of the highest perfection.



6-Inch Pipe Line Valve



4-Inch Pipe Line Valve

JEFFERSON UNIONS

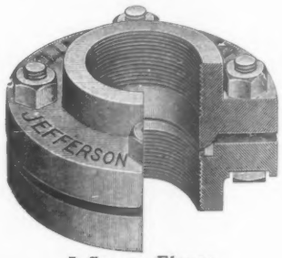
And Flanges—With Perfected Ground-Ball, Brass-to-Iron Joints

The Jefferson Union Company devote the extensive facilities of an old, substantial business to the making of Unions and Flanges of very exceptional merit.

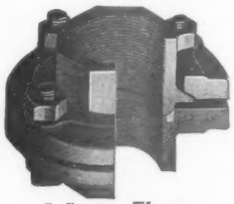
All "Jeffersons" possess ground-ball joints, which permit adjustment when pipe is out of alignment. All are ground together in pairs and are never separated afterwards.

All possess the brass-to-iron feature, preventing corrosion —and the brass ring is set away from the runway where it cannot be injured or dislodged.

Jefferson Union Style A



Jefferson Flange Style D



Jefferson Flange Style B

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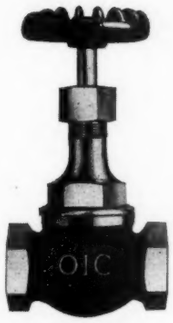
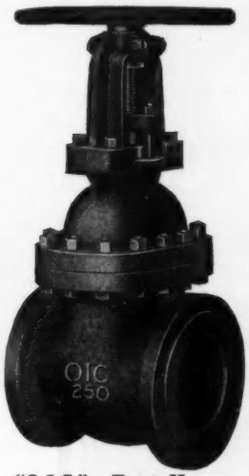
"O.I.C." Standard Gate Valve



"O.I.C." Composition *Disc Brass* Valve

"O.I.C." Brass Nickel Bronze Disc Globe Valve

"O.I.C." Standard Brass Gate Valve



"O.I.C." Extra-Heavy Wedge Gate Valve

OHIO INJECTOR COMPANY VALVES

The "O. I. C." line of high-grade valves, injectors, ejectors, lubricators, gauges and kindred specialties was selected by The Continental Supply Company as one of its exclusive lines, because of unusual merit and exceptional suitability to Oil Industry conditions.

All "O. I. C." products are characterized by the same scientific designing, high-grade materials and exacting workmanship which go into the famous "O. I. C." locomotive appliances. They will be found to meet every requirement of the refinery, pipe line operator, producer and contractor for handling steam, compressed air, hot or cold water, and oils.

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We have found Tnemec Paint to be a *remarkably good* paint. It will preserve steel against the corroding action of tropical climates and salt air exposure. As a rust inhibitive paint Tnemec has no equal, *in our judgment.*

Our reputation for square dealing, our guarantee of real satisfaction, and our ability to render prompt service, stand behind Tnemec Paint.

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QUALITY SERVICE PRICE

World Reserves of Petroleum Today

Revision of Best Estimates Brought Up to Present After Deducting Interim Production. Drain on the United States

By L. M. Fanning

Oil reserves of the world as of the end of 1918 have been estimated (*Stebinger estimate) at 43,055,000,000 barrels, of which 7,000,000,000 barrels were credited to the United States. Early in 1920 this estimate for the world was revised to around 60,000,000,000 barrels (*White estimate.)

The lapse of the comparatively few years since these estimates were made has revealed little change in the relative productive importance of the various countries covered but has been marked principally by an unsuspectedly heavy increase in the output of the United States. Later estimates, covering United States reserves exclusively, have considerably boosted the estimates made for this country by Stebinger and White.

Table 1 gives in the first column the Stebinger estimates, showing for the United States 7,000,000,000 barrels in reserve, out of a total estimated reserve of 43,055,000,000 barrels. It is shown that despite the heavy production recorded by the United States to the end of 1918, this country, including Alaska, had the largest estimated supply of petroleum under ground of any other country.

Russia appears a close second with 5,820,000,000 barrels estimated for southeastern Russia, southwestern Siberia and the Caucasus region, and 925,000,000 for northern Russia and Saghalien. Taking South America and dividing it into a northern and southern territory, the former territory, which includes Peru is given 5,730,000,000 barrels and the latter, 3,550,000,000 barrels.

Persia and Mesopotamia, the former having made noteworthy strides as a producer in the last few years, are listed with 5,820,000,000 barrels. Mexico is given 4,525,000,000 barrels and the East Indies 3,015,000,000 barrels.

Revised Upward

For the purpose of studying this estimate of world production in the light of what has transpired since it was made (as of the end of 1918), the succeeding columns of Table 1 have been added showing interim production of the various countries and divisions enumerated, the petroleum reserve remaining at the end of 1923 after deducting interim production from the 1918 reserve estimates, and the number of years' reserves indicated at the end of 1923 on the basis of 1923 production.

The United States during 1919-1923 inclusive produced 2,583,291,000 barrels, or some 37 per cent of the total amount of oil allotted to it at the end of 1918. The 4,416,709,000 barrels indicated as remaining under ground would amount to only six years' supply at the rate production was going in 1923. As stated, United States reserve estimates have been revised upward since 1918, but even so the annual drain is far greater than and out of all proportion to other countries.

It will be noted that after deducting production from 1919 to 1923 inclusive from the total world estimate given by Stebinger in 1918 there is indicated a reserve amounting to only 38.7 years. Mexico would seem to have about a 25-year supply and Rumania, Galicia and western Europe 63 years, while the other countries or divisions have indicated resources running from over 100 years to several thousand years.

Figured by Hemispheres

An interesting study of the world estimate by hemispheres is possible. When the estimate was made the Western Hemisphere was given 21,800,000,000 barrels, compared with 21,255,000,000 barrels for the Eastern Hemisphere. Deducting interim production, the Western Hemisphere is found with indicated reserves well under those of the Eastern Hemisphere, the figures being 18,326,000,000 barrels for the former as against 20,805,000,000 for the latter, revealing the uneven drain that is going on and being significant in regarding the future sources and movement of petroleum. This is the more strikingly brought out by applying the 1923 rate of production to the indicated reserves, which method shows underground supplies amounting to only 20 years for the Western Hemisphere compared with 190 years for the Eastern Hemisphere.

*Oil Resources of the World

	Pet. Remaining End of 1918 Bbls.	Prod. 1919-1923 Inclusive Bbls.	Pet. Remaining End of 1923 Bbls.	Production 1923 Bbls.	No. Years Reserves Based on '23 Prod.
U. S. and Alaska	7,000,000,000	2,583,291,000	4,416,709,000	735,000,000	6.0
Canada	995,000,000	981,937	994,018,063	175,000	5680.1
Mexico	4,525,000,000	837,427,000	3,687,573,000	149,472,000	24.7
Northern South America, including Peru	5,730,000,000	†41,209,672	5,688,790,328	†13,688,000	415.6
Southern So. American, including Bolivia	3,550,000,000	10,863,989	3,539,136,011	‡3,250,000	1088.9
Algeria and Egypt	925,000,000	5,967,121	919,032,879	1,046,000	878.6
Persia and Mesopotamia	5,820,000,000	80,273,655	5,739,726,345	25,000,000	229.8
S. E. Russia, S. W. Siberia and Caucasus region	5,830,000,000	150,560,600	5,679,439,400	38,167,000	148.8
Rumania, Galicia and Western Europe	1,135,000,000	72,473,386	1,062,526,614	16,840,000	63.1
Northern Russia and Saghalien	925,000,000	.....	925,000,000	.....	.....
Japan and Formosa	1,235,000,000	10,651,777	1,224,348,223	1,695,000	722.3
China	1,375,000,000	.....	1,375,000,000	.....	.....
India	995,000,000	38,374,000	956,626,000	7,575,000	126.3
East Indies	3,015,000,000	91,429,159	2,923,570,841	18,887,000	154.7
Total	43,055,000,000	3,923,503,296	39,131,496,704	§1,010,795,000	38.7
Total Eastern Hemisphere	21,255,000,000	449,728,698	20,805,270,302	109,210,000	190.5
Total Western Hemisphere	21,800,000,000	3,473,774,598	18,326,226,402	901,585,000	20.3

*Estimates indicated on map showing petroleum resources of world made in 1919 for the U. S. Geological Survey by Eugene Stebinger, then Chief of Foreign Mineral Section, (first given as above by Dr. David White, Chief Geologist, Geological Survey, May, 1920).
†Includes Trinidad. ‡Argentina only. §Not including 200,000 barrels for other countries not classified.

The practical oil man, as pointed out in an article appearing in The Oil and Gas Journal of September 24, 1924, is satisfied to point to the remarkable oil discoveries that have followed in the wake of increasing petroluem consumption and to cite these as convincing argument against pessimistic predictions of early exhaustion. He believes the United States still has petroleum reserves of sufficient volume to allay any such fears for years to come. He bases this opinion not only upon significant field results in recent years as indicating what may be expected in the future, but upon the consideration of improved science in drilling and refining and upon realignment of foreign petroleum sources which may be expected to affect the drain on our supply.

Gain From Consumption

The fact that the United States has led in petroleum production has gone hand in hand with its attainment of an overwhelming preponderance in petroleum consumption, with all this implies in industrial and social advantages. This country accounts for around 70 per cent of the world's petroleum consumption, if we are to figure the oil supplied to ships at domestic ports in with actual domestic consumption of our own oil and imported oil. Its current rate of production is over 60 per cent of the total world production.

As the world requires oil and can pay for it, petroleum will be forthcoming no matter how arduous the physical obstacles or how burdensome the expense of exploration, development and transportation. The earth has been scarcely scratched for oil. Of half the earth's surface that is credited as more or less favorable for the occurrence of oil, only an infinitesimal acreage has been tested.

Mexico will continue to yield large quantities of oil. The bulk of Mexico's production has come from an area of some 50,000 acres out of many square miles of territory favorable for the occurrence of oil. However, the first era of the Mexican oil industry—that marked by accessible and phenomenal prolific pools—is drawing to a close, existing fields are being exhausted and Mexican oil territory of the future presents problems in practical wildcatting comparable to those encountered in entering any entirely new country.

Peru, the oldest producing country in South America, is producing from only a limited acreage of its probable productive area. Colombia, Venezuela and Bolivia have large areas of favorable oil territory, the extent of which it will take years of concentrated drilling operations to determine.

Russia's chief production comes from the Baku districts of only 9 square miles, and the untested areas in many parts of that country—the northwestern provinces and the central and western provinces, in addition to the Caucasus—are generally recognized as extensive and of great potentiality.

Persia and Mesopotamia are also among those comtries in which the drill must churn for many years and over great areas before a reasonable estimate of their petroleum resources can be determined. Assyria and Arabia, China, India and northern Africa might be added to the list.

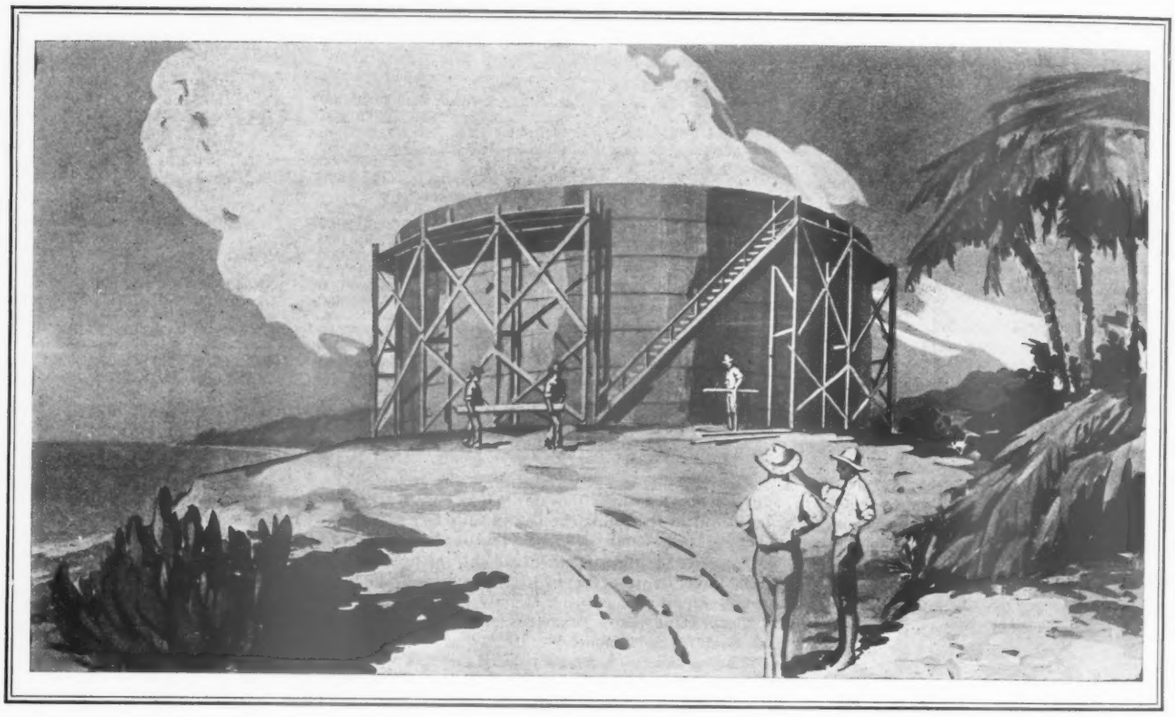
Artificial Barriers

In noting some of the factors that enter itno the drain upon specified sources, it is well to remark that economic law does not always dictate; that there are artificial barriers constructed by discriminatory laws, onerous petroleum codes and political disturbance. A strictly economic development of oil would be thinkable if the entire world had a real open door policy but unfortunately discriminatory regulations, which hamper and even make impossible natural competitive development, exist in some countries.

Already world demand for oil has wrought significant changes in petroleum development in various countries. Looking into the future, but without any attempt to fix dates, it is conceivable that the United States will be importing crude oil in quantity from South American countries, that pipe lines through the jungles will supply great fleets of tankers which, in turn, will link up our refineries with the fields, and that Arctic oil will mingle with the tropic product in our steam and pressure stills; that our pipe line systems now running oil from interior to coast will reserve themselves and supply interior refineries with foreign crude. But in this picturization is no thought that American oil will not be flowing through our refineries at the same time in quantity. It is not painted to stress America's future dependence on foreign sources, but might be intended to indicate to an extent the result of competition of oils of different sources upon our own supply. Stimulated development might have produced some more accessible sources comparable in productivity to Mexico's Golden Lane. The picture is to illustrate that the oil exists, will be found, will be refined and will be delivered if the world requires it.

*Two authoritative and widely discussed estimates of the petroleum resources of the world have been made. Both were presented in a paper, "The Petroleum Resources of the World," read by Dr. David White, chief geologist of the United States Geological Survey, in May, 1920.

STEEL PLATE



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The Petroleum Iron

Sharon,
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CONSTRUCTION

P.I.W.
STEEL PLATE CONSTRUCTION

Here are some of the "out there" places of romance where P. I. W. tanks are holding oil.

India	Mexico
Greece	West Indies
Central America	England
Straits Settlements	Alaska
China	Japan
Canada	South America
Philippines	Ceylon

Works Company

Pennsylvania
Kansas City, Kans.

Houston Tulsa San Francisco

Activity in Galicia Dates From 1862

Record Production of 12,480,000 bbls. Attained in 1909 With Steady Decline Recorded Since That Time

By Elbert C. Isom

Perhaps the most important points of contention on the western front during the late war were the Galician oil fields, namely those of Boryslaw-Tustanowice and Mraznica. This fact is significant when one considers the pitifully small production of these nearly played-out fields compared to the vast producing areas and gigantic output of those in our own country. It indicates the grave shortage of petroleum products confronting not only Germany, Austria and Poland, but all European nations as well.

The activity of these fields dates back to the year 1862, when a crude oil, rich in paraffin, was first discovered at Boryslaw. Since that time they have played an important part in the development of the world's petroleum industry, as well as the history and politics of Galicia, in fact of all Europe. At first, according to old reports, it was thought that Boryslaw would prove to be another Baku. As time went on, however, these hopes were dispelled, for, as shown in the accompanying chart, the entire Galician production never exceeded 208,000 zisterne (12,480,000 bbls.) for any one year, and reached and maintained that figure only during the record year of 1909. Since then production has been more or less steadily diminishing, for which the exhaustion of the sands and the encroachments of salt water are to be held more responsible than any damage wrought by the Russians during the invasion of 1914-15. This is confirmed by a study of the accompanying chart prior and subsequent to these years, although the sabotage and destruction carried on by the invading armies are generally held accountable by the present owners and producers for the following decline of the Galician fields.

Present Production

An up-to-date idea of what these fields are capable of producing at the present time may be gained by a study of the two succeeding tables. Table 1 is a list of the various interests producing oil in the fields of Boryslaw-Tustanowice and Mraznica at the time of the writer's visit there in April, 1923, together with their average daily production for that month in zisterne (car loads) and in American barrels. Table 2 gives the same data for the month of April, 1924.

Table 1

Producing company—	Zisterne per day	Bbls.
Silva-Plana	20.90	1,255
A. T. Fanto	18.80	1,128
A. T. Galicia	17.49	1,049
Konzern "Dabrowa"	16.95	1,017
Konzern "Premier"	14.31	858
Bruder Goldmann	11.46	688
A. T. Nafta	6.41	384
Sp. Naft. Limanowa	4.84	290
Dr. Segal, Liftschutz & Miernik	280	168
A. T. Iriag	2.33	100
Scott u. Buber	2.30	138
Malopolski Przm. Naft.	2.20	132
Gisela	2.18	131
Kornhaber & Erdheim	1.50	90
Emanuel Lockspeiser	1.40	84
Oil Invest. Assoc.	1.00	60
Angela	1.00	60
I. M. Waterkeym	0.85	51
Sp. Naft. Browak	0.66	40
A. T. Olej Skalny	0.51	31
Polski Przemysl A. T.	0.45	27
A. T. Polska Nafta	0.15	9
Total Av. daily production..	130.49	7,830

The production of oil for this period from the three above named fields may be approximately apportioned as follows:

	Per cent
Tustanowice	43
Boryslaw	37
Mraznica	20
	100

***Table II**

Producing company—	Zisterne per Day	Bbls.
Silva Plana	22.47	1,348
A. T. Nafta	21.87	1,312
Konzern "Premier"	16.09	965
A. T. Galicia	15.70	942
Konzern "Dabrowa"	13.38	803
A. T. Fanto	12.80	768
Imre Pirnitzer	6.54	392
Sp. Naft. Limanowa	4.10	246
A. T. Olej. Skalny	3.38	203
Malopolski Przem. Naft.	2.76	166
Uryczer Ges.	2.16	130
Scott u. Buber	1.77	106
A. T. Iriag	1.62	97
A. T. Mraznica	1.50	90
Emanuel Lockspeiser	1.37	82
Gisela	1.30	78
Polonia	1.18	71
Oil Investors Association	1.08	65
Sp. Naft. Browak	0.93	56
Kornhaber u. Erdheim	0.89	53
H. Bloch & Co.	0.63	38
I. M. Waterkeym	0.56	34
Polski Przemysl A. T.	0.54	32
Omnium	0.49	30
Total average daily production	135.11	8,107

*Petroleum Zeitschrift, June 20, 1924—pages 864-867.

The production of oil for this period from the three above named fields may be apportioned as follows:

	Pct.
Tustanowice	42
Boryslaw	38
Mraznica	20
	100

Drilling Activities

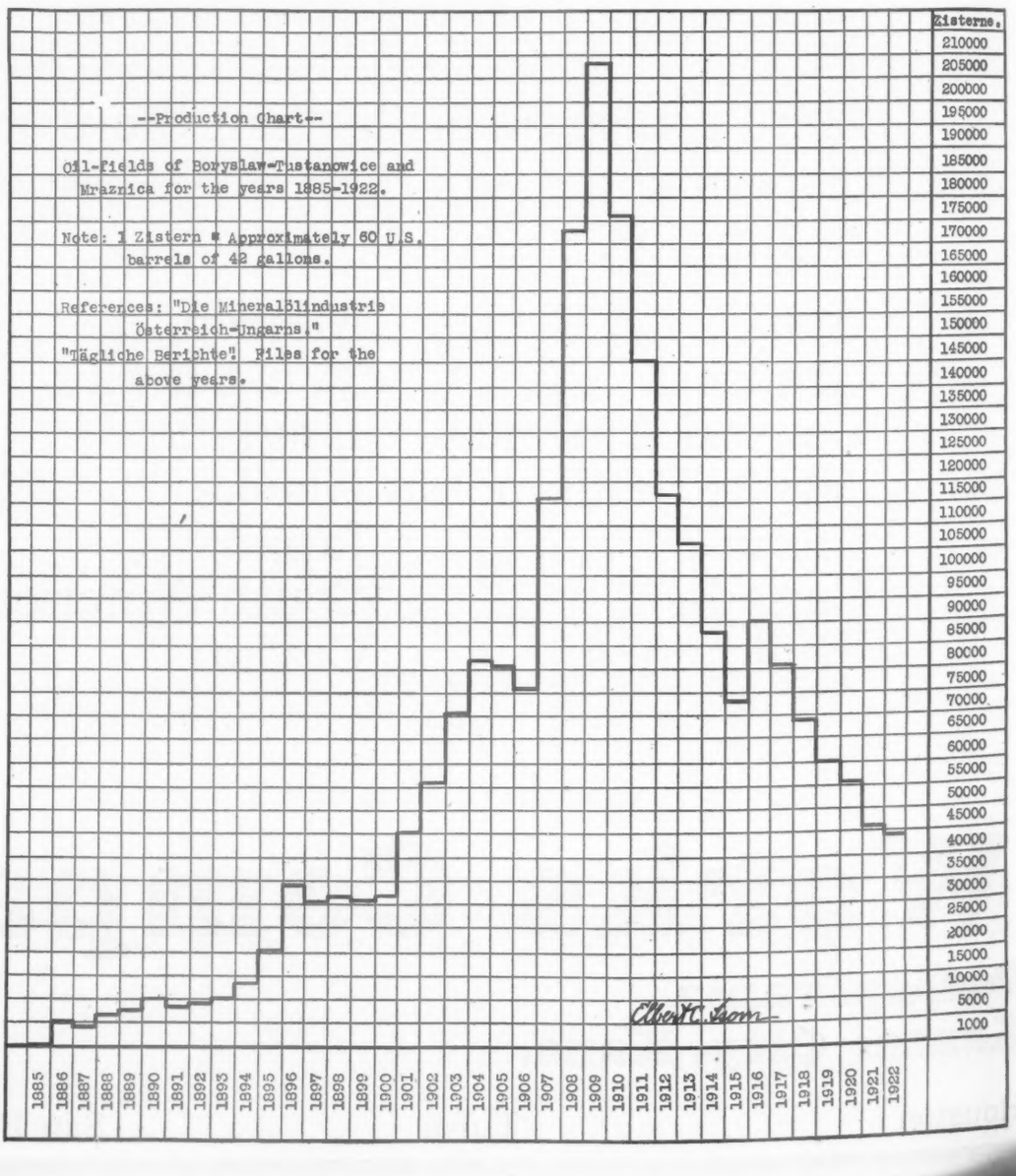
From the foregoing tables it will be seen that the entire daily production of the combined fields of Boryslaw-Tustanowice and Mraznica barely exceeds 8,000 bbls., and was even slightly lower than that figure a year ago. The better showing made early this year may be accounted for by a frenzied drilling program undertaken last fall and continued through the winter months by Silva-Plana, A. T. Nafta and a few of the other more important producers in this region.

According to recent advice from this district, out of a total of 666 active wells in the combined fields of Boryslaw-Tustanowice and Mraznica approximately 60 are in the state of drilling and 20 more are being redrilled to lower horizons.

These fields are located on the "Boryslaw anticline," in reality a geo-anticline striking in a general southwesterly direction along the foothills of the Carpathian Mountains. The pay sands are struck at depths ranging from 900 to 1,400 meters (3,000 to 4,600 feet), and lie under a cap rock of three exceedingly hard formations. All beds are folded and severely titled, making drilling difficult. The dip averages about 40 degrees. Here, in the last six decades, some 1,500 wells have been drilled, only a small per cent of which are producing today. Many are now being redrilled in the belief that fresh oil horizons lie at a lower depth. In some cases these redrilled wells have been successful in striking oil in small quantities, but the casing off of the upper sands so reduces the size of the tube as to make further drilling impractical. As small as 3-inch casing has frequently been extended into the lower sands.

All drilling has previously been accomplished with steam power, though recently the Diesel motor and the American electric system have been occasionally substituted. The Canadian pole rig is universally employed, with steel poles

(Continued on Page 160)



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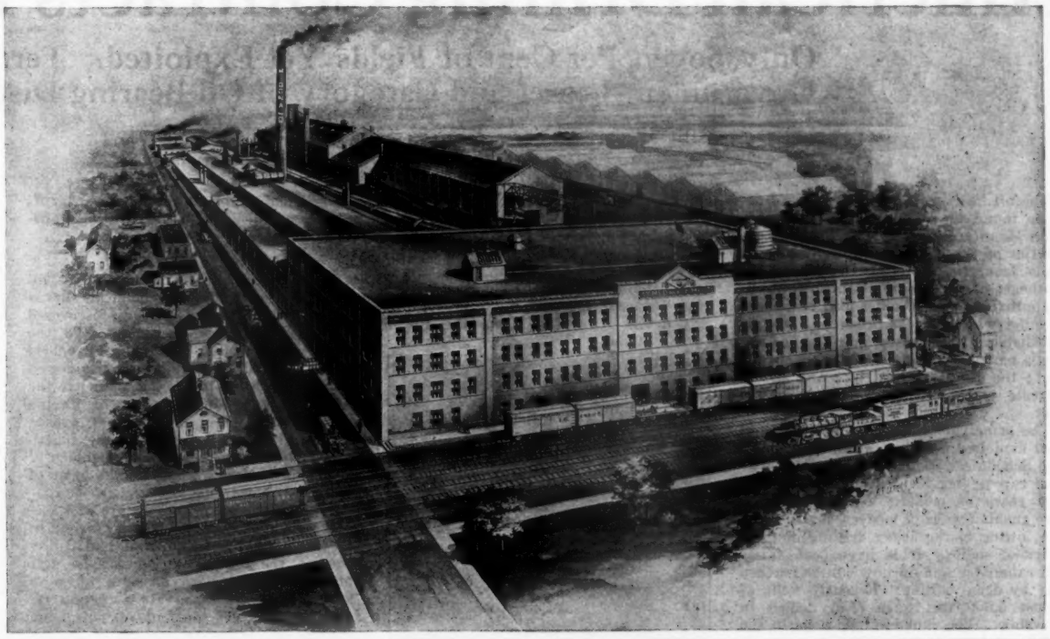

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American Drilling Contracts in Poland

Only Seven Per Cent of Fields Yet Exploited. Terms of Government Leases and Category of Oil Bearing Districts

By Leon Orlowski
Secretary of the Legation of Poland, Washington, D. C.

The oil bearing districts of Poland are to be found in the slopes of the Carpathian Mountains, which form the southern frontier of the country. The oil belt extends from the town of Gorlice to the southeast of the city of Stanislawow. It is approximately 250 miles long and about 30 miles wide, and comprises four geological districts; the western, or Gorlice district; next, to the east, the Krosno district; the Boryslaw district; and in the extreme southeast, the Stanislawow district.

The principal producing and at present most exploited fields are around Boryslaw and Schodnica. These fields were developed rapidly for the reason that in their first years of modern exploitation they gave gushing wells of modern depth. However, owing to the heavy drilling in these districts, shallow folds have been fairly well exhausted and oil now can be reached only by deep drilling. Recently wells of almost 5,600 feet have been drilled in Boryslaw. The range of the wells in the Polish oil belts is from 600 feet in depth to 5,500 feet. Because of these drilling conditions in Boryslaw, a very large supply of engineers and workmen especially skilled in deep drilling are to be found in this Polish oil center.

Steady Recovery

The Polish oil industry was severely stricken by the World War. The retreating Russian armies in 1915 destroyed a large percentage of the existing oil wells. Nor was the postwar period with its inflation policy in Europe generally, and with the depreciation of the Polish mark in particular, favorable for the development of this important industry. The money and credit stringency interfered with the expansion of drilling. But since 1921 a slow but steady increase in oil production in Poland was observed, proving the underlying vitality and fundamental soundness of the Polish oil industry. Now that the new currency, the zloty, based on gold reserves, has been introduced in Poland, there is every reason to believe conditions in the industry will improve. In fact, a further increase in new drillings has been reported for the current year.

The production of crude oil in Poland in 1913 amounted to 1,113,668 metric tons (one metric ton equals 2,204 lbs.). In 1914, the first war year, the production of oil declined to 655,600 metric tons. In the last three years production amounted to 705,596 tons in 1921, 712,428 tons in 1922, and 737,182 tons in 1923. This last figure represents more than 5,000,000 bbls. of oil. But the Polish fields have a much greater potential output which could be realized were the proper supply of capital available for prospect and new drilling.

Galician Reserve

Investigations have shown that the supply of petroleum in Little Poland (Galicia) may be estimated at 100,000,000 to 160,000,000 tons, and that barely 7 per cent of the oil fields known to exist is being exploited. The amount of petroleum produced in Poland from beginning of the oil industry to the present time scarcely totals 26,000,000 tons, or 15 per cent of the estimated supply. Of this amount, 18,000,000 tons have been taken from the oil fields of Boryslaw alone within 25 years, and only about 8,000,000 tons from all other fields within a period twice as long, although some of these other fields are known to represent just as good possibilities as did Boryslaw at the beginning of its development.

The Ministry of Industry and Commerce leases the Government oil fields to private interests upon the following terms:

Terms of Leases

It requires practically no payment for the oil fields but imposes an obligation to drill wells by requiring a bond as a guaranty for carrying out the contract. A corporation may lease from the Polish

Leon Orlowski

Government oil fields divided into lots of 100 hectares each, itself making a selection from the unleased fields. Within two years from the date of signing the agreement, the corporation must put up two rigs and begin drilling upon the lots which it has selected under the contract. In the third year the company must begin drilling with two additional rigs, and within five years it must start drilling at the rate of one rig to each 100 hectares. A corporation making the contract must obligate itself to give to the Polish Government, of the bituminous minerals obtained, that is, petroleum natural gases and mineral wax, from 14 per cent to 20 per cent gross, depending on the locality. The contracts are made for 25 years and the right of renewal for 15 more years. To encourage drilling upon the Government oil fields, the Government waives the right to collect its percentage of the amount of gas used for the drilling of new wells. This is a favorable concession since the fuel used in drilling constitutes a very material outlay. Moreover, the Government applies special low tariffs upon pipe lines and other drilling apparatus imported from foreign countries.

Category of Fields

The Government oil fields may be divided on the basis of geological survey and of petroleum wells already discovered into the following categories: To the first category belong producing oil fields; to the second, fields directly connected geologically, with producing areas; to the third, areas where prospects of finding petroleum are based on geological investigations and on oil flows; to the fourth category, areas in which the existence of petroleum is held possible on the basis of geological indications.

In the first category there are 492 hectares; in the second, 1,664 hectares; in the third, 3,147 hectares, and 14,512 hectares in the fourth category. The first three categories, with an area of more than 5,000 hectares, create a certain reserve for the development of petroleum production. With the progress of investigation, there is good reason to believe that new reserves will be found in the future. The Ministry of Commerce and Industry places great stress on the continuance of geological exploration of the possible oil fields by the State Geological Institute.

New Drilling Contracts

During recent months, new drilling contracts have been signed. The agreements and contracts concluded guarantee the drilling of new wells. Among others, contracts have been made with the Standard Oil Co., and quite recently with the Vacuum Oil Co. of New York. At present there are negotiations under way with English capital looking to the leasing of 10,000 hectares of oil fields. It should be noted that the English group referred to is under strict control of the British Government.

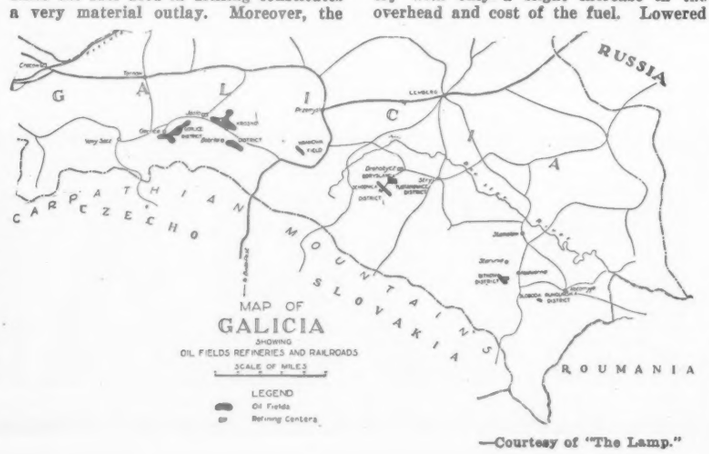
Investigations of the oil fields have shown that the new oil deposits are at a much smaller depth than those of the present producing fields. The depth of new wells recently opened was less than 1,600 meters and even better results are expected in the future.

Refineries of Poland

The refineries of Poland are equipped to handle a much greater production of crude oil than the present. In fact, they are working now at only 50 per cent of their capacity. It is obvious that an increase in crude production would affect favorably the cost of refining and larger profits would result as greater amounts of crude oil could be handled by a refinery with only a slight increase in the overhead and cost of the fuel. Lowered cost of refining would mean better export possibilities.

In 1923, when the home consumption of petroleum products amounted to 293,629 tons, 314,940 tons were exported. The Polish exports of oil products for that year went to Germany, Czecho-Slovakia, Austria, Hungary, Danzig, and even to France and Switzerland. This shows that the polish oil industry can compete successfully in those markets with other oil exporting countries and that increase in the production would naturally tend, by lowering costs, to expand these export markets. To facilitate oil exportation, the Polish Government recently abolished the export tax and reduced some of the internal taxes. In its freight rate policy also the Government endeavors to facilitate the export of petroleum products. Special export rates two and one-half times lower than the normal domestic rate are applied.

Summarizing, it may be said that the Polish Government, fully realizing the importance of developing the oil industry in Poland, has embarked on a broad policy with the direct aim of encouraging the investment of both domestic and foreign capital in the industry. It intends to amend the Oil Act and safety regulations for oil mines in the near future in order to place the petroleum administration on the most efficient basis and to modernize in every way its oil legislation.



—Courtesy of "The Lamp."

BIG WELL IN MEXICO

Mexican Petroleum Co.'s No. 1 Chapacao was completed at 2,251 feet, and is rated for a potential flush production of 40,000 bbls. The drill went some 100 feet in the Tamasopa limestone before the big pay was encountered. The well is just south of the National Lines' (San Luis division) right of way, a little west of Chijol station. Just east, Mexican Petroleum drilled a dry hole recently in its No. 2; and the National Lines completed a dry hole near this No. 2 last Saturday at 2,275 feet. Prior to that National Lines completed its No. 1 for a duster a few meters east of its No. 2 at 2,400 feet.

Apart from the National Lines' right of way, on which it is drilling for fuel oil for its locomotives, there can be no line drilling on this completion of Mexican Petroleum Co., for it owns all the property on both sides of the railroad right of way.

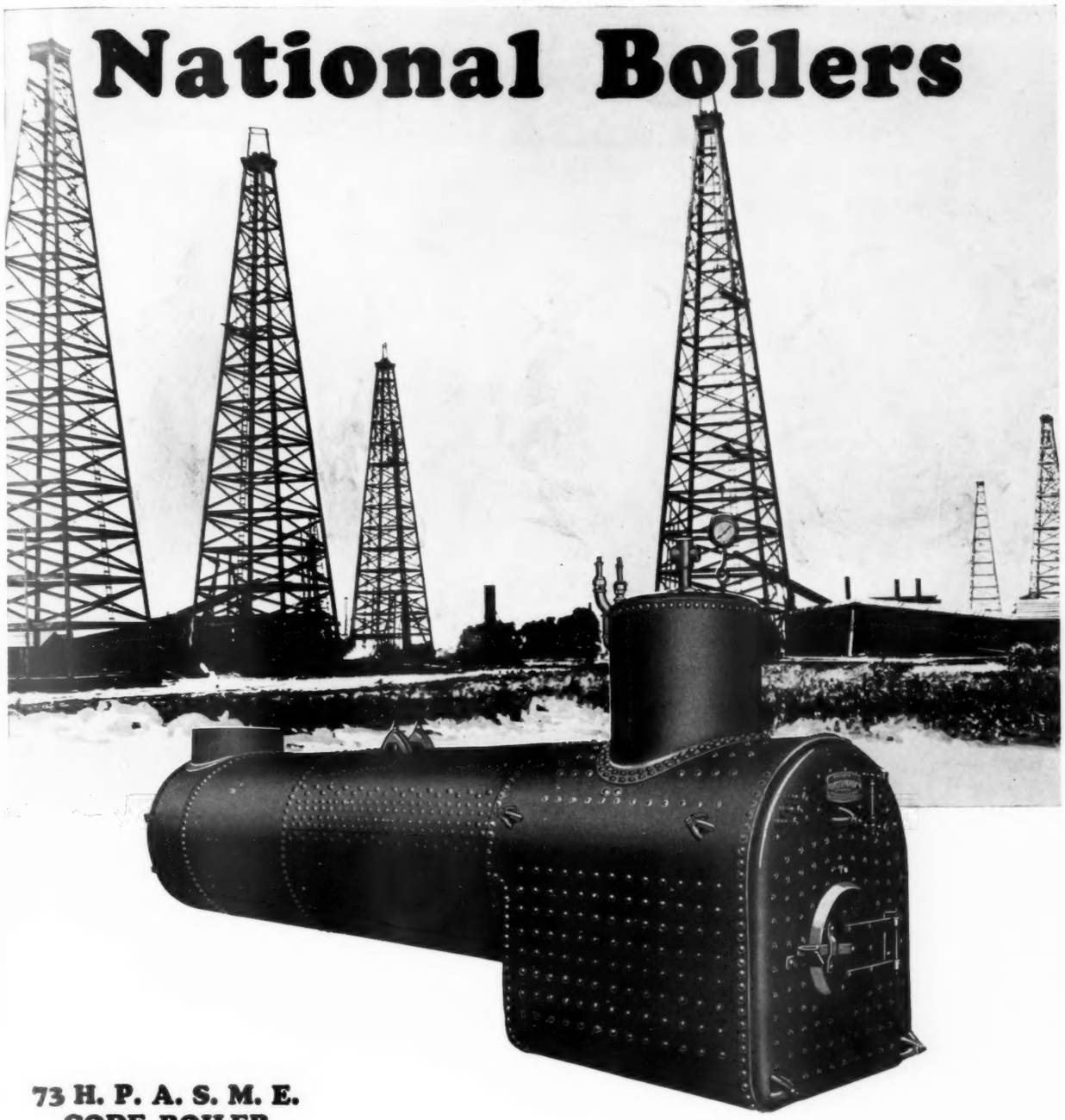
NEW SWEATING STOVE

The Burmah Oil Co., Ltd., after making exhaustive tests, has adopted in its refineries a new design of sweating stove which is less costly and more efficient. This stove is the invention of Hugh L. Allen and James Moore, its works manager and superintendent engineer. The standard size of the stove, which is formed of a mild steel shell, is 12 feet in diameter and 20 feet high, in which are fitted 31 water-jacketed mild steel intermediate coils, the top and bottom of the main shell also being water-jacketed.

DEATH OF JOHN W. DODGE

CHATHAM, Ont., Dec. 13.—John W. Dodge, a former well known oil driller of Marthaville and Petrolia, died in Detroit recently, in his forty-eighth year. Mr. Dodge spent some years in foreign drilling, having drilled in Persia, Egypt, West Africa and other foreign fields, but had recently been employed with the Dodge Motor Co.

National Boilers



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Designed to meet the demands of deeper drilling

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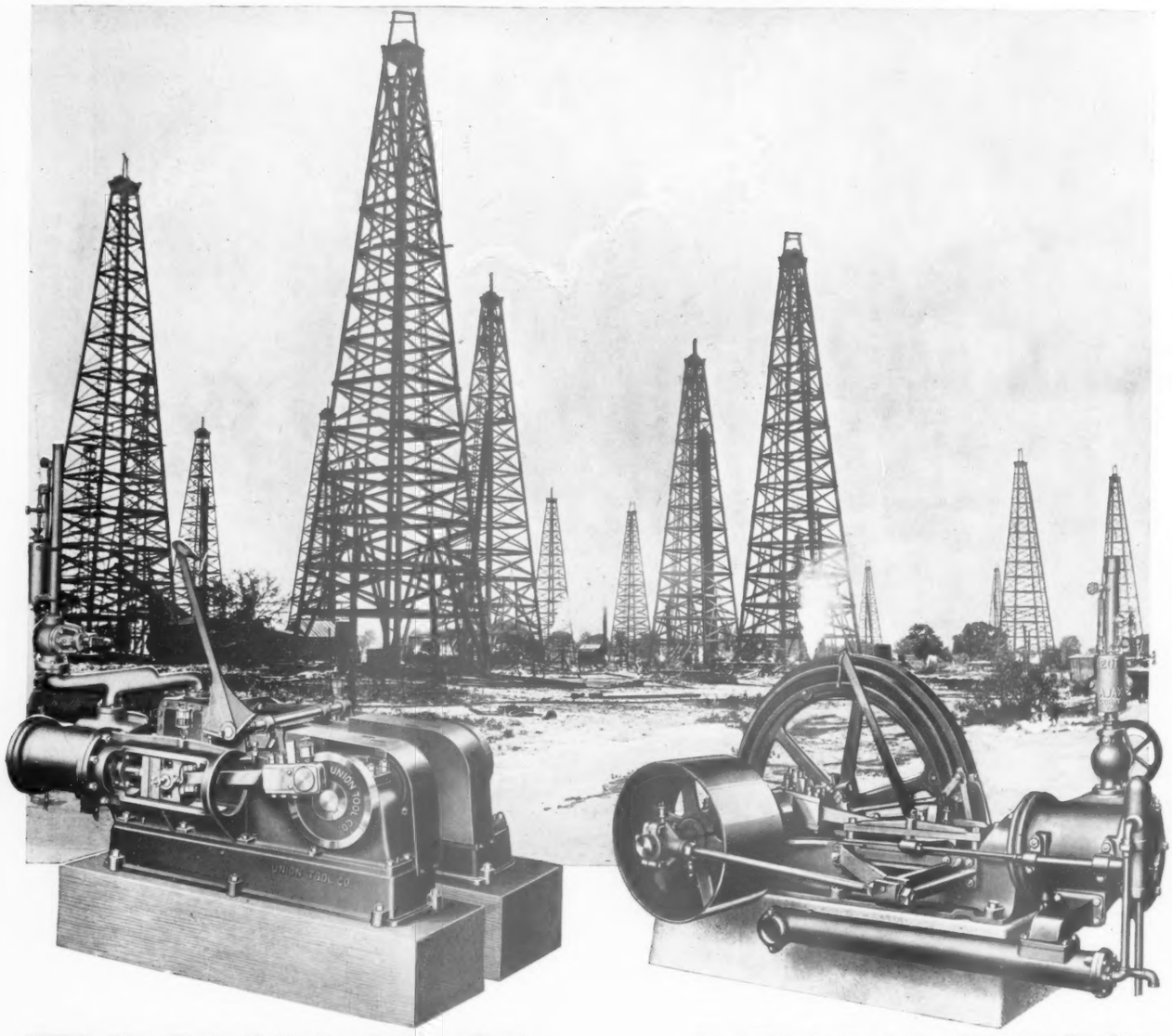
STEAM DRILLING ENGINES



IDEAL-Ajax Twin Cylinder Drilling Engine

Ajax Single Cylinder Drilling Engine

Ajax Engines have been the standard in the oil fields for the past forty years · They are unexcelled today

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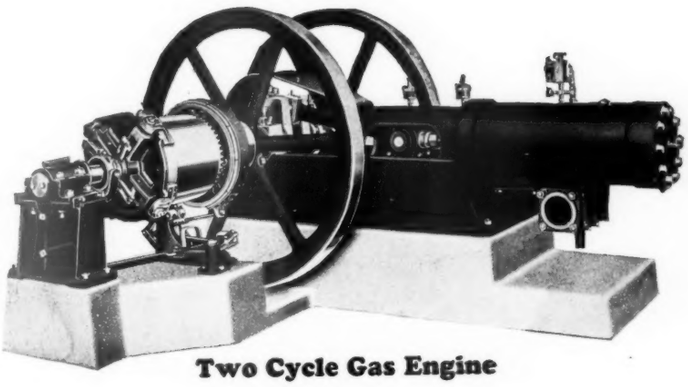
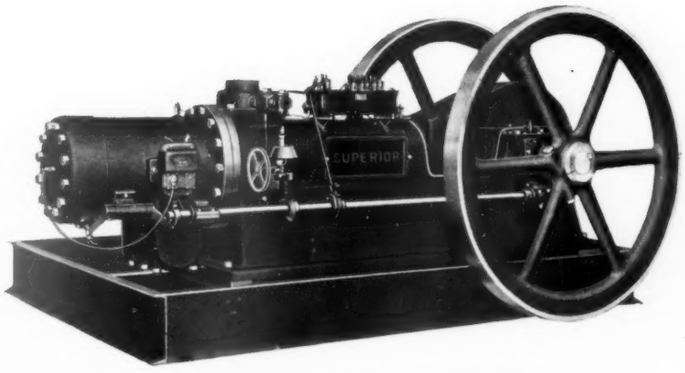
SUPERIOR
GAS AND OIL ENGINES



Two Cycle Gas Engine

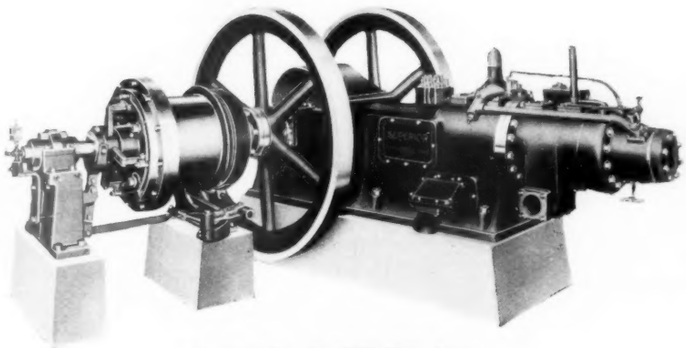
Superior Two Cycle Gas Engines are especially adapted for pumping wells in deep territory.

Built in sizes ranging from 15 to 35 H. P.



Enclosed Type Gas Engine

Superior Enclosed Type 40 H. P. Gas Engine for pumping or drilling.



Type P. S. Oil Engine

Superior Heavy Duty Oil Engines are used extensively for wells on beam—pumping powers and compressor stations.

Built in sizes ranging from 25 to 85 H. P.

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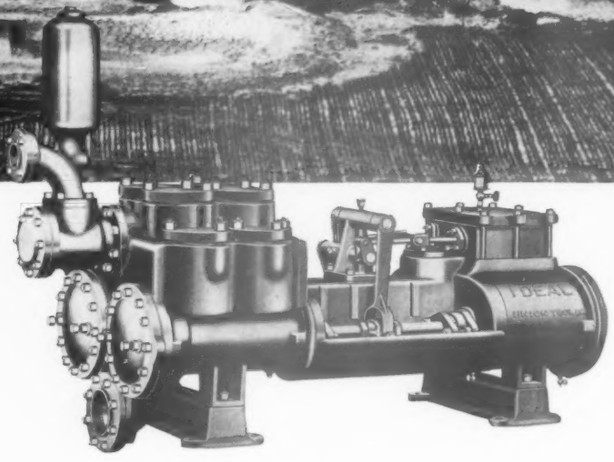

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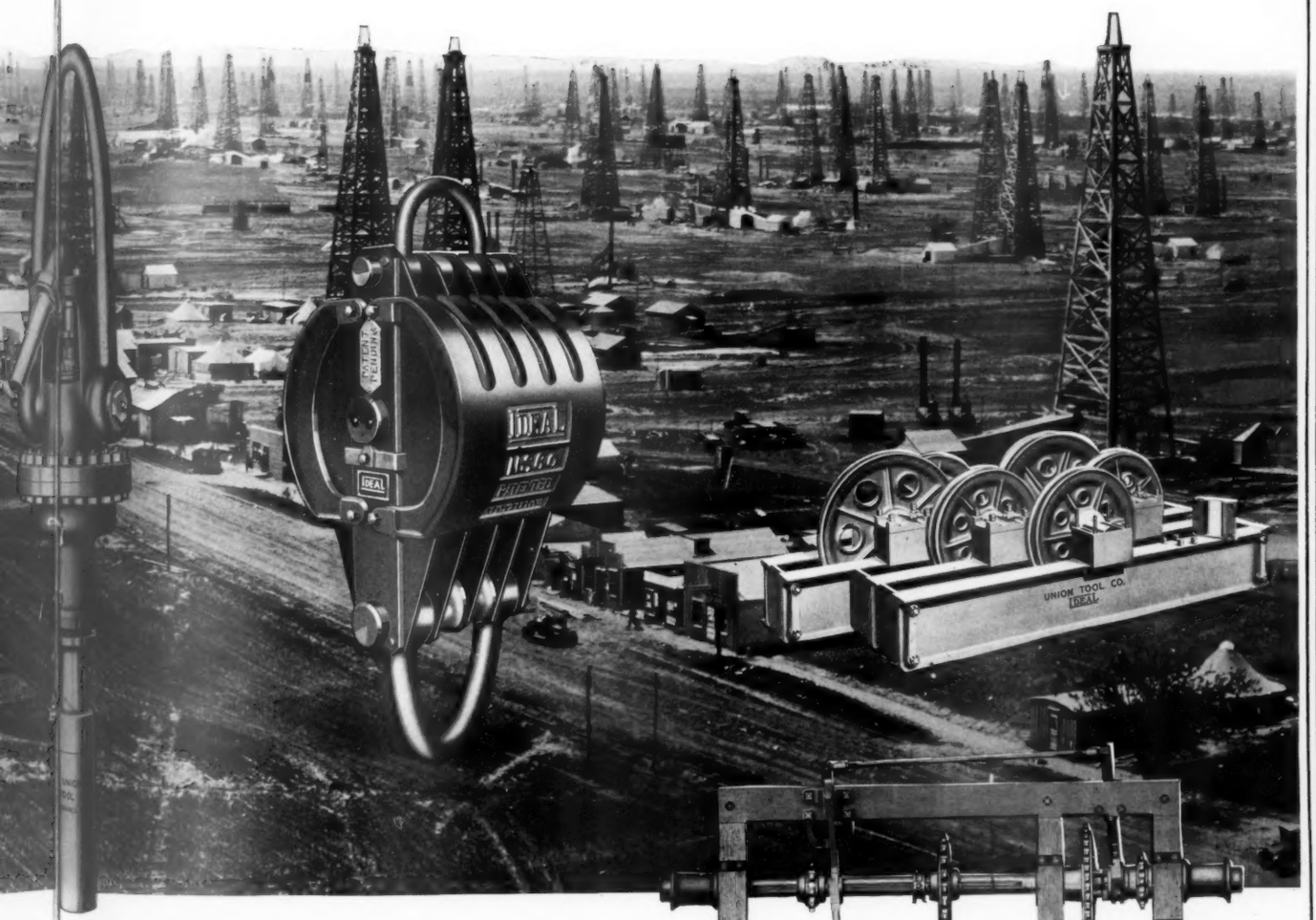

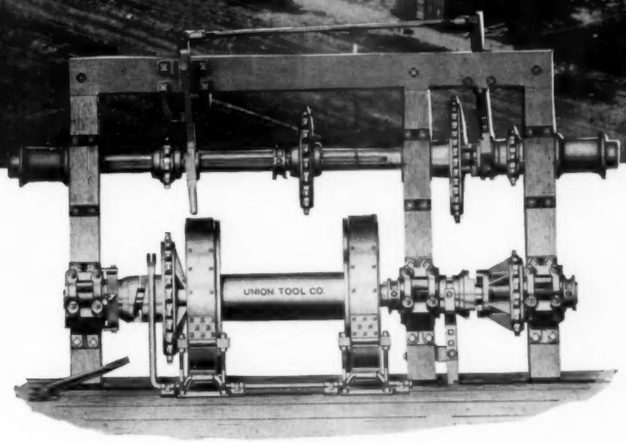

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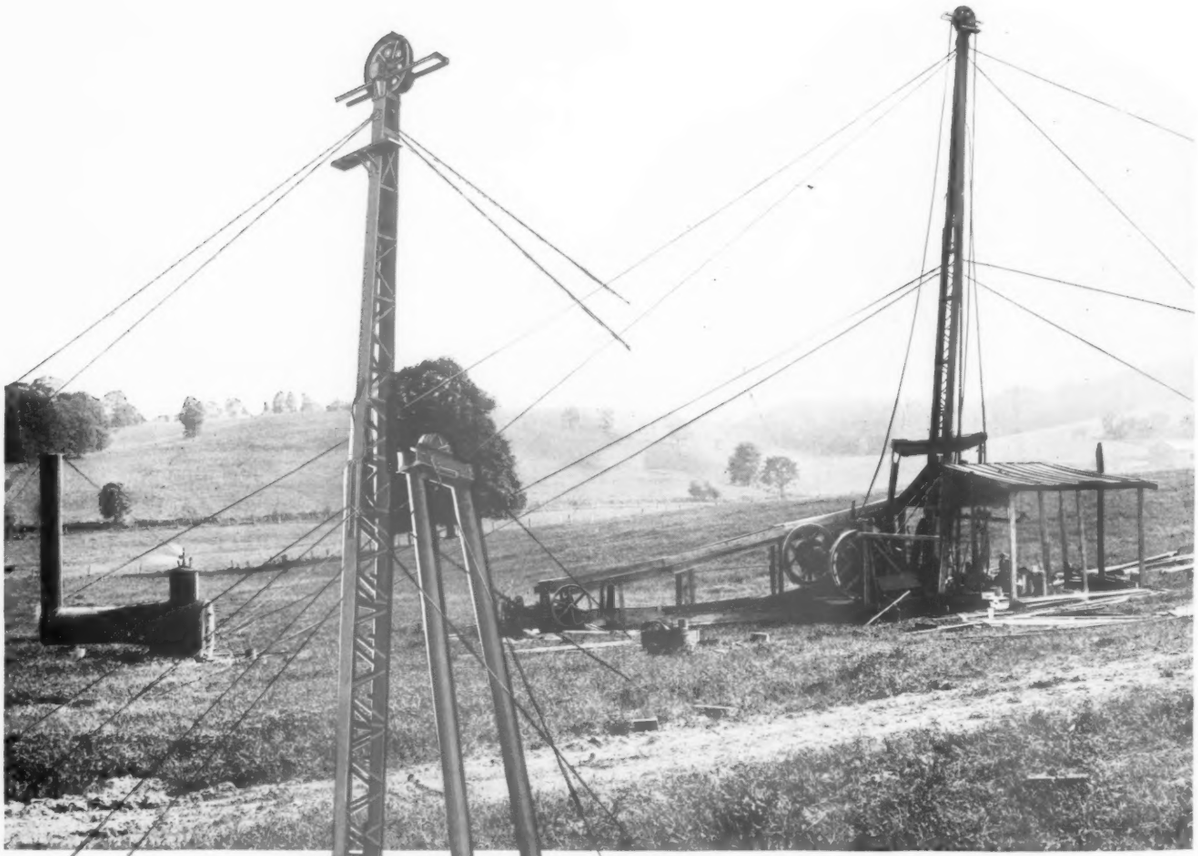

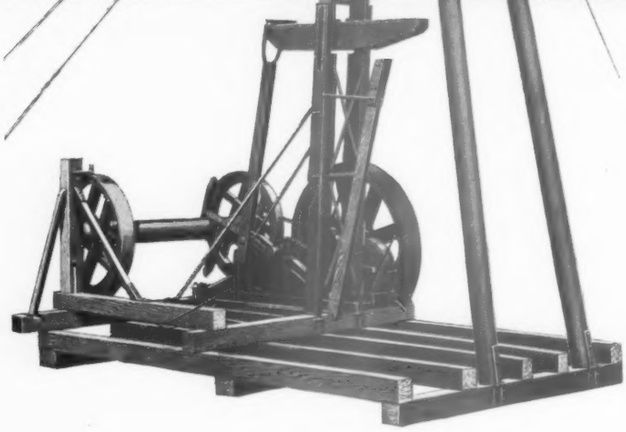

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Clutch Drive

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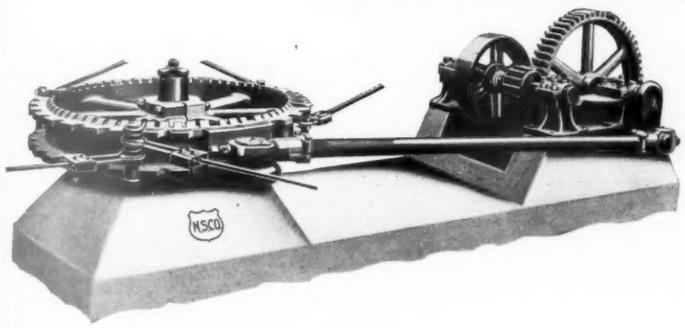

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Complete equipment for either power or individual well pumping

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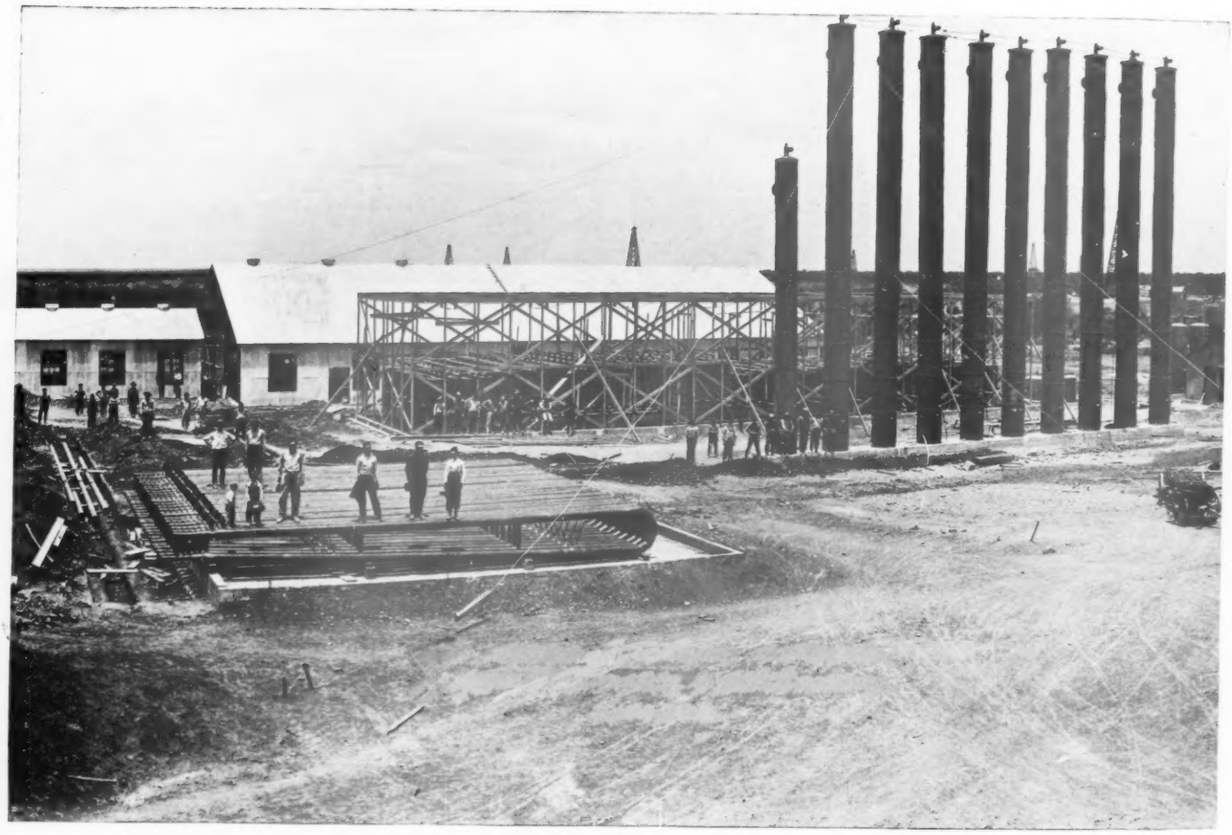

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Petroleum Production in Colombia

New Pipe Line Expected to Hasten Development of Oil Resources Hitherto Held Back by Lack of Transportation Means

By Abraham Martinez
Director Colombian Government Bureau of Information

The Republic of Colombia comprises a territory of almost 500,000 square miles, which occupy the northeast angle of South America, with the Atlantic Ocean on the north and the Pacific Ocean on the west—only a few miles from the Panama Canal. All climates are found in Colombia, from tropical heat to the cold of snow-capped mountains.

The Andes Cordillera, branching off into three different sections, runs through the country from south to north, with peaks as high as the Tolima, which is 5,620 meters above sea level, and the Ruix, at an elevation of 5,600 meters, or the Herves, 5,575 meters above sea level.

In order to give a better idea of the wonderful variety of climates that nature has bestowed upon that country, the following example may be cited; the train leaves Girardot, which is situated on the bank of the Magdalena River, where the temperature is 86 degrees F., and eight hours later it reaches the great Sabana of Bogota, where the perpetual spring temperature of 13 degrees F. is delightful.

All agricultural products of the torrid and temperature zone are produced in Colombia, from cotton, tobacco, rubber, sugar cane, cocoa, bananas, coffee, to wheat, barley, peaches and apples. Leading among all products cultivated is coffee, exports of which reach 2,500,000 bags annually.

Country Conservative

Peace in Colombia has not been disturbed for a period of 25 years, and it is to be noted this condition is not due to the armed imposition of a strong Government, but instead to the firm will of the Colombian citizens, who—reaping the benefit of past experience—look upon home peace as the greatest factor in the country's public welfare. The freedom of the press enjoyed in Colombia today equals that of the most progressive countries in the world, and the equality of rights for all, protected by the laws, the impossibility to acquire any exclusive privileges or rights, place Colombia very high among the most civilized counties of the universe.

Colombia's finances have been reorganized by a Financial Mission composed of American financiers engaged by the Government of Colombia for that purpose. There is a central bank, which is similar to the Federal Reserve Bank in the United States; the country's finances are looked after conscientiously according to modern methods; Colombian currency is quoted, at times, at a premium over the American dollar, and the good credit that Colombia enjoys abroad is the result of the good management of the finances at home.

Nearly all minerals known are found in Colombia, which enfolds a fabulous treasure in its bosom. It may be said that, in spite of the large quantities of gold, platinum and silver which have been removed from the mines, the block of mining wealth in Colombia has hardly been touched. Colombia ranks first in the world as a platinum-exporting country and is practically the only country today producing emeralds.

Oil Bearing Formations

The oil-bearing formations of Colombia extend approximately over 34,000 square miles, of which only about 3 square miles have been proved by drilling.

The prospective oil fields of Colombia may be roughly divided into seven districts:

(a) That of the Caribbean Coast from Rio Hacha to the Gulf of Uraba.

(b) The area of the northern part of the Department of Norte de Santander, near the headwaters of the Catatumbo River, which flows east from Colombian mountains into Lake Maracaibo in Venezuela.

(c) The region covered by the original De Mares concession, lying in the

Abraham Martinez

Department of Santander (del Sur) east of the Magdalena River.

(d) The region lying along the foothills of the Central Cordillera between the headwaters of the Sinu River and the San Jorge River, partly in Antioqua and partly in Bolivar.

(e) The region to the west of the Magdalena River, along the eastern sides of the Department of Antioquia and Tolima, in the Magdalena Valley.

(f) The region west of the city of Popayan, in the Department of Cauca, near the Pacific Coast, as well as the area between Quibdo and Cali.

(g) The plains of San Martin, Casanare and Meta, on the southeastern part of the country.

There are also rumors of surface indications of petroleum said to exist west of the city of Medellin, in the region of the town of Urrao, situated west of the Cauca River Valley in the uplands of the Western Cordillera.

Chief Concessions

In spite of the extensiveness of these fields, only in the case of one concession have works of any importance been carried out on a commercial scale, up to the present time. This is the De Mares Concession, where the Tropical Oil Co. has developed its activities.

Senor Roberto de Mares, one of the pioneers in oil exploration in Colombia, secured this concession from the Government prior to 1900, covering a very large tract in the Department of Santander (del Sur). This gentleman has also been associated with Senor A. Armella, of Barranquilla and Cartagena, in the concession covering the Repelon tract on the Caribbean coast. The first efforts to interest foreign capital in the property covered by the De Mares Concession met with failure due to the revolution of 1898-1904, the party of engineers brought down in 1904 not being able to land at Barranquilla on account of the disturbed condition of the country at the time. The concession was renewed in 1905 and again in 1916, and the Tropical Oil Co. of Pittsburgh, Pa., was interested in the project; this resulted in active prospecting of the property during 1917, 1918 and 1919 and the bringing in of three flowing wells.

The subscribed stock of the Tropical Oil Co. amounted to 1,500,000 shares, with approximately $4,000,000 available for development work. A total of about $800,000 had been spent up to the summer of 1919. Later the Tropical Oil Co.'s concession was taken over by the International Petroleum Co., Ltd., which has made great progress in development work.

The lands of the De Mares concession front on the Magdalena River in the Department of Santander, extending to the north as far as the Sogamoso River (a tributary of the Magdalena on the eastern side), to the east as far as the high mountain range, and south as far as the Carare River (also a tributary of the Magdalena). The frontage on the Magdalena is approximately 30 miles, and the depth from the river to the mountains averages 75 miles—the area containing in all about 1,300,000 acres (another estimate gives 3,000,000 acres).

The concession is subject to third-party rights and does not include the right to the subsoil of lands adjudicated prior to the land laws of October 28, 1873.

Center of Operations

The headquarters of the company are located at the river port of Barranca Bermeja, at the outlet of the Colorado River, where this company has built houses for quarters and offices, a machine shop and workshop, storehouse, etc. Launches are operated on the Colorado River during the wet season to the oil wells, which are located at the junction of the Oponcito River with the Colorado 30 miles southeast of Barranca Bermeja. The known oil fields lie between the Colorado River and the Sogamoso River, in the Department of Santander.

The land is level for 4 or 5 miles back from the river and then becomes very broken and covered with a dense tropical jungle and hardwood timber. The country becomes more difficult farther to the east and south toward the high mountains of the Eastern Cordillera.

The Colorado River cannot be navigated, even by canoes, during about seven months of the year, so the company is now engaged in constructing a good wagon road from Barranca Bermeja to the oil wells, over which a pipe line (6 inches in diameter) is also to be run to bring the crude oil down from the wells to the small refinery being erected at the river at Barranca Bermeja. The total length of this wagon road and pipe line will be 35 miles, and the road will be so constructed as to take tractor traffic. The camp at the wells will be the headquarters of the new prospecting work being done farther to the northeast in lands of the concession, in which there is every prospect of obtaining still greater supplies of high-grade crude oil.

The small refinery being installed at Barranca Bermeja will have a sufficient capacity to supply the entire country with petroleum products such as gasoline, kerosene, lubricants, etc., which, according to the conditions of the Minister of Public Works, published in July, 1919, will be sold in Colombia "at not greater than New York prices." Barranca Bermeja is approximately 400 miles from the Caribbean coat at Cartagena, and Bogota is distant about 300 miles by river and rail. A large center of consumption—the second largest, if not the

(Continued on Page 122)

PRODUCING OPERATIONS IN RUMANIA; INCREASED DRILLING AND OUTPUT

The principal development in Rumania as regards oil operations during the past year is the passage of the new mining law which provides a form of nationalization of companies, State monopolization of pipe lines and the ultimate monopolization of the internal marketing of petroleum products.

The provisions of this law have been the subject of protest by the principal foreign interests, including American, operating in Rumania, who asserted that they were, in effect, confiscatory, and several foreign Governments have supported these claims and formally entered objection.

Upon the passage of the law the American Government took cognizance of the matter as related to the interests of American companies and entered protests. Peter Augustus Jay, United States Minister at Bucharest, was summoned to Washington and conferred with the State Department, after which he recently returned to the Rumanian capital. When he left Washington it was indicated progress had been made toward the adjustment of pending questions between the United States and Rumania. It was stated that assurances had been made by the Rumanian Government that the new mining law would be administered in such a way as not to handicap foreign companies.

The position is still taken by the principal foreign companies operating in Rumania, however, that so long as the mining law is in force, free operation is impossible, and the result is a restriction of operations, so far as they are concerned, to lands at present held with little prospect of further acquisition under the terms of the new mining law.

State Restrictions

According to the general provisions of the law, all strata of mineral substances from which metals, metalloids or combinations of these substances may be extracted, as well as strata of mineral fuels, bitumens, mineral waters in general and natural gases of all kinds and all the riches of the subsoil of whatever nature are and remain the State's property in all their development from the surface to no matter what depth.

The right to exploit the mineral substances belonging to the State is exercised by the State, either directly or by transfer of this right to private initiative, according to the regulations and conditions of the law; concessions are granted only in regions previously declared cedable mining property on the basis of prospecting pursued by exploration work from which the undoubted existence of an exploitable stratum has been proved.

The law provides the granting of prospecting permits and of exclusive permits for exploring. A zone is declared cedable mining property only if upon its exploration through the exclusive permit, or through nearby exploitations, its shall be proved that strata exist which may be exploited. This region immediately becomes concessionable mining property and the Ministry of Industry and Commerce

(Continued on Page 148)

Oil Prospects in the African Continent

Little Done in Development Outside of Egypt but Oil Seepages and Indications Are Found in Many Widely Scattered Points

By Staff Correspondent

PARIS, France, Dec. 6.—It is quite likely that sooner or later, the African Continent, up to now, for various reasons rather neglected so far as the oil production is concerned, will be called upon to contribute to the world's liquid fuel supply.

Very little has been done in Africa in order to develop prospective oil fields. Superficial oil indices have been found in a good many points of the African continent. Outside of Egypt, no interesting production results have yet been achieved, but this is not surprising, considering the relatively extremely small amounts which have been spent in prospecting researches and exploration work in Africa compared to the amazingly high amounts spent in other countries to develop an oil industry.

Oil indications and seepages are known to exist in the following points of the African continent:

French North Africa

Renewed efforts have been made since the armistice by a number of old and new oil companies to locate and develop oil fields in North Africa.

Tunis

In the Province of Tunis, the Societe Franco Africaine des Petroles, holder of prospecting permits covering an area of about 10,000 acres located partly in the district of Dejebel-Bou-Delbouz, and partly in the district of Medjez-El-Bab, not far from the city of Tunis, has begun the drilling of a well, now close to 1,500 feet. Traces of natural gas, oil and shales impregnated with ozokerite have been encountered, although, according to geological data, the oil sands are not expected to be struck before about 1,800 feet is reached.

As early as 1912-1913, the Carthage Oil Syndicate, Ltd., had started drilling in Tunis. The wells dug down to a depth of 500 feet produced small quantities of oil.

During 1923 a wildcat test drilled near Sloughia, east of the city of Tunis, struck an oil sand at the depth of about 270 feet, which produced, by bailing, an average of 80 litres, about 25 gallons, of crude oil per day.

Other oil indications and seepages have been located on he Algerian side of the Province of Tunis, at Djebel Kebouch, near Kef, as well as southeast of the city of Tunis, at Potinville, and near the city of Bizerte, not very far from the shores of the Bay of Bizerte.

Algeria

Years ago the Mediterranean Sea pirates used to land on the Algerian shores, in order to repair their boats and paint them with a heavy coating of crude oil extracted from seepages found near the mouth of the Cheliff River, and, farther inland, at Ain-Zeft. Later, a good many oil seepages were located in the region surrounding Mostaganem, mostly east and south of that city.

Drillings were undertaken by various companies, amongst others the Pearson Group in the Cheliff Valley, at Tliouanet and near Relizane where numerous seepages could be found. A well drilled at Ain Zeft to about 1,200 feet gave, during a few days, a production of about 40 bbls. per day of an oil of very good quality. Another well drilled near Relizane gave a production of 4 bbls. a day.

After drilling, from 1914 to 1917, several wells which produced about 10 bbls. a day each, the Societe Algerienne des Petroles de Tliouanet, affiliated to the Pearson group, ended a well at Melilla, which produced about one ton per hour for 15 hours before it took fire and sanded up.

The annual production of the Societe Algerienne des Petroles de Tliouanet has been about 1,300 tons. It is to be noted that none of the producing wells drilled in Algeria has reached a greater depth than 1,200 feet, and nothing proves a larger production could not be found at a greater depth.

The Algerian crude oils are of a good quality. Melilla's crudes have a gravity of 0.830, and give up by distillation about 50 per cent naphthas, while Ain-Zeft's crudes have a gravity of 0.971, and produce 3 per cent naphthas and 15 per cent kerosene.

Morocco

Oil seepages are known to exist in Morocco mostly in the northern part of the protectorate, where outside of several French companies having operations in hand, the British firm of S. Pearson & Sons has done quite a lot of prospecting.

For a long time the existence of heavy oil springs has been known along a line extending from Larache to Fez.

In 1912 some crude oil was found at Oued Mellah. In 1917 the Societe Algero-Marocaine began prospecting in the northern part of Morocco, with interesting results. Later a well drilled near Petit Jean, a village of the Moroccan Rharb, struck a rather rich oil sand. The oil district of Morocco is located in the region called the Rharb and can be described as being located in a triangle, limited by the towns of El Ksar, Meknes and Fez.

Up to date the most fortunate of all oil companies operating in Morocco has been the Societe Cherifienne de Recherches et Forages, which took up the claims formerly owned by Pearson & Sons at Tselfat. From the latest reports it would appear that four wells drilled at Tselfat are now producing the following daily amounts: 40, 3, 10, and 3 bbls. The quality of the crude oil is good, its contents in light hydrocarbons being given as 75 per cent. The deepest of these is not more than 240 to 270 feet.

Considering the very limited amount of exploration work done in Morocco it is really very difficult to conclude as to Morocco's oil wealth. One must, however, admit that very promising indices have been found in the protectorate.

There is really abundant evidence that petroleum exists in large quantities in French North Africa, but it would seem the companies have been discouraged in their research work by the lack of proper legislation and have not had at their disposal the funds necessary to such undertakings as oil prospecting and development.

Ivory Coast

In 1907 an Anglo-French company was organized to prospect a district near Eboinda, along the coast. The operations lasted about two years, during which a few small wells were drilled. It was claimed one of the wells struck an oil sand at the depth of about 1,800 feet, but the company, most likely for financial reasons, was obliged to stop its work. No new exploration work seems to have been started since in the Eboinda district.

Gold Coast

It has been claimed by geological explorers that petroliferous land exists over an area of about 384,000 acres in a portion of the Gold Coast colony known as Appolonia, situated on the sea coast and adjoining the French Ivory coast boundary. Abundant oil indications exist, seepages occur in the outcrop of oil sands, and cretaceous stratifications, with oil impregnated shale and natural gas.

In 1889 and 1900 boring for oil was started in Appolonia, a few hundred yards from the sea shore, and at a shallow depth the struck a few gallons of oil. The work was abandoned for lack of funds.

Nigeria

Deposits of bitumen and oil occur in some parts of Nigeria. Quite a number of shallow wells have been sunk in Nigeria, small quantities of crude oil have been obtained, not, however, in paying quantities. Oil seeps have been mostly located near Oridinge and Mamfe, along the "Cross River."

Cameroun

A few years before the war the Germans had started prospecting for oil in the district surrounding Logababa, near Douala. Two small wells were drilled and produced some oil. The operating empany was obliged to stop its work for lack of funds. It has, however, been clearly established that some crude oil seeps from a good many points surrounding Logababa. The oil is of a good quality and looks very much like Baku's crude oil.

French Gabon and Congo

Viscous hydrocarbons are known to exist in the Gabon colony in the following points:

(a) Apope, in the Denis Peninsula, south of Libreville. The viscous hydrocarbon seeps through a bed of cretaceous lime.

(b) N'Cogo, near Samkita, on the left flank of the Ogoone River, south of N'Djole. Natives of that district use the heavy crude oil to paint their boats and protect their cabins against dangerous insects called "white ants."

(c) Fernan Vaz, south of Agouma, and all the district extending from Agouma to the River Bakoue are covered with oil seeps well known and used by the natives. No real prospecting work has ever been done in the colony, although an analysis of samples of hydrocarbons found at N'Cogo and Fernan Vaz has given very satisfactory results.

Belgian Congo

It is claimed that in April, 1922, some oil was discovered in the region of Ouganda. It has been reported also that oil seepages had been found in rather large numbers along the lower course of the Congo River.

Angola

In Angola, the results of the exploration of the Sinclair Concession (Companhia de Petroleo de Angola) are said to be distinctly favorable. It has been reported in November, 1923, this company had struck oil at a depth of 4,200 feet in a well near Cunga, not far from the town of Loanda, along the northern coast of Angola. The daily production was reported at the time as beng about 3 bbls. of heavy crude oil of good quality.

Portugese East Africa

In Portuguese East Africa, the Anglo Persian Oil Co. has for some time been prospecting for oil in the Territorio de Nyassa, governed by the Companhia de Nyassa. There have been rumors of oil indications near Mgagane, a station between Beira and Chindio on the Trans-Zambesia Railway.

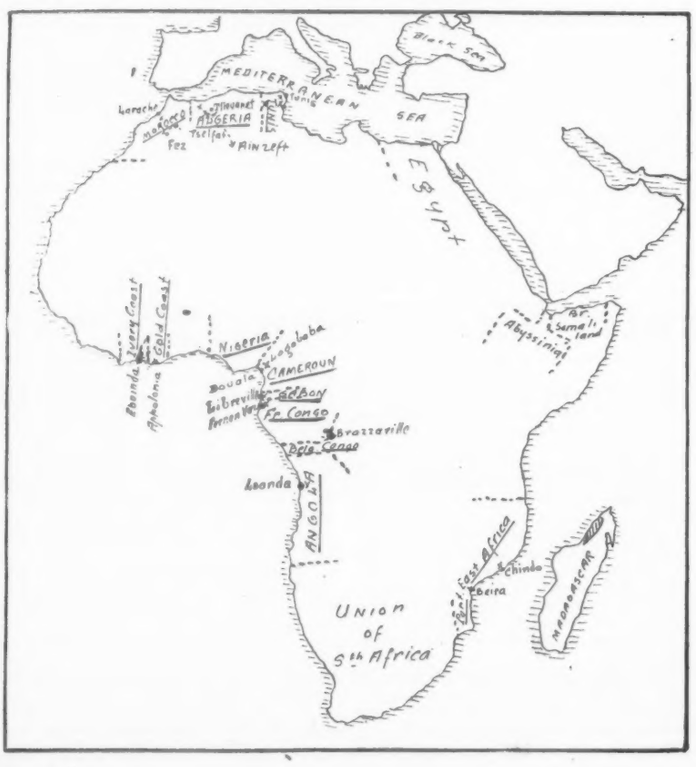
In 1922 a report issued by the Portuguese Colonial Department announced officially the discovery of an important oil territory near the Trans-Zambesia Railway.

Madagascar

Recent geological prospecting work done through the northwestern part of Madagascar indicates that very extensive oil fields must have existed in this part of the island. On a rather large area the oil sands were uncovered, so that all the lighter hydrocarbons evaporated. This is proved by the fact that in a good many points large beds of asphalt impregnated

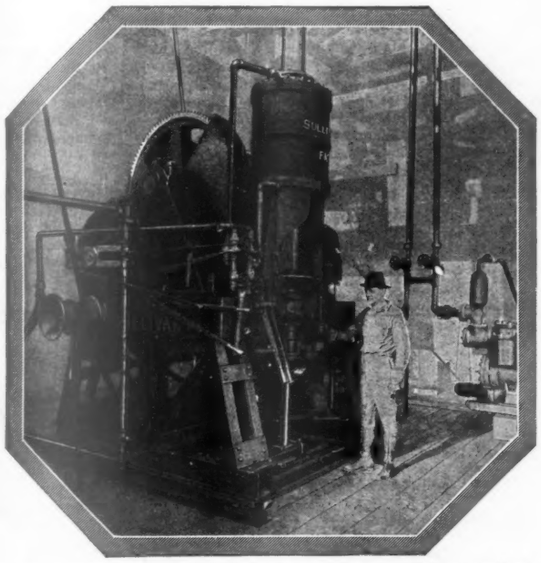
(Continued on Page 164)

OIL INDICATIONS IN AFRICA



SULLIVAN DIAMOND CORE DRILLS

the modern method of Oil Field Exploration



Largest Diamond Drill ever built. The Sullivan "FK," a standard machine designed particularly for deep oil field drilling. Capacity 2 in. hole to 7,000 ft., 4 in. hole to 5,000 ft., or will set 4 in. casing at 4,000 ft. Hydraulic feed, 40 tons pressure up or down, weight on frame 10 tons.

(1) Deep Tests

Use the Diamond Core Drill for deep tests in virgin territory, (to 5,000 feet.)

The cores secured will show accurately the presence or absence of oil, and the thickness and relation of all strata. One Diamond drill hole will frequently give as much information as a whole series of borings with drills of other types.

The drill will handle rapidly any formation encountered, giving you speed in either "cable" or "rotary" ground. It will handle mud fluid. It will control heavy rock or gas pressure, without damage or loss.

(2) Structure Drilling

Why guess at the right spot for a well, when the geologist has no outcrops to map from?

Up-to-date Companies now block out their acreage with shallow diamond drill holes. The relative depths of the "Key-bed," as found by the drill cores in a pattern of holes, enable geologists to draw an accurate map of the anticline, and point to the exact site where a well will strike the "high."

30 to 40 Sullivan Drills have been used for this work in Oklahoma and Texas in the past two years. Some Companies own two to a dozen and keep them constantly busy.

In this exploratory work, the Sullivan Diamond Core drill is unequalled for accuracy, speed and portability. It is a precision tool, the result of 50 years of experience and improvement.

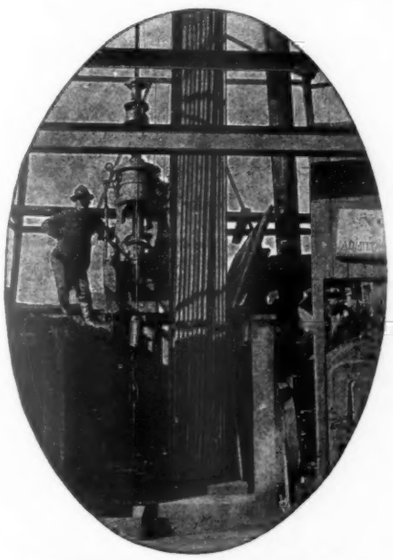
Portability

The light weight and compact design of Sullivan Diamond Drills make them very desirable for foreign fields. For a given depth, a Diamond Drill outfit will weigh half as much, or less, as a rig of either cable or rotary type. Heavy strings of large casing are not necessary.

Sullivan Drills have been used successfully for oil exploration in Colombia, Venezuela, Ecuador, Mexico, Northern Africa, India, Borneo, Australia, etc.

Sullivan Drills were invented in 1875. They have been improved many times, and are still the most modern method of prospecting for minerals. They are built in capacities from 300 to 7,000 feet in depth and for cores from 1 to 7 inches in diameter. Mining men and engineers (or their fathers), in almost every country in the world have used Sullivan Diamond Drills and depend on their accuracy, rapidity and low operating cost.

Experienced drill operators will be sent with Sullivan drills when desired.



Sullivan "P-2" Utility Diamond Drill, good for depths to 3,500 ft. (2¾-in. core.) Holds records for speed in 2,100-foot holes, Tampico district, weight on frame 5½ tons.

OTHER SULLIVAN PRODUCTS

For oil field purposes, include
Air and Gas Compressors.
Dry Vacuum Pumps.
Air Lift Pumps
Portable Compressors
Portable Hoists, Air or Electric.
Hammer Drills.
Concrete Breakers.
Clay Spaders (pneumatic)

Sullivan "CN" Diamond Core Drill, Used Largely for Structure Drilling Capacity in Depth, 1200 Feet; Diameter of Core, 2 Inches

COMPRESSORS AIR LIFT DIAMOND DRILLS SHARPENERS FORGES
FORGE HAMMERS COAL CUTTERS ROCK DRILLS DRILLING CONTRACTORS

SULLIVAN TRADE MARK
MACHINERY COMPANY
88 East Adams Street, Chicago

30 Church Street, New York
Dallas, Tulsa, Garber, Denver, San Francisco, Los Angeles
Foreign Branches
London, Salisbury House, E. C. 2 Calcutta, Jessop & Co., Ltd., 93 Clive Street
Paris, 18 Ave., Parmentier Mexico City, Edificio Oliver, No. 3
Santiago, Chile, Casilla 27

PRODUCTION OF PETROLEUM IN COLUMBIA

(Continued from Page 119)

largest in the country—is Medellin, the capital of Antioquia. From the site of the refinery it is about 125 kilometers (77 miles) by river to Puerto Berrio, from which point Medillin is reached by rail over two divisions of the Antioquia railway, 181 kilometers (109 miles) long. The largest consumption in Colombia will be that of residual fuel oil for the river steamers, of which there are about 140 plying on the Magdalena and its tributaries, a number of which are more or less navigable for shallow-draft boats. It may be expected that fuel oil will take the place of the wood now used for fuel and will greatly facilitate the operation of river transportation.

The wells have respective depths of 1,700, 1,900 and 2,300 feet, and are located very near each other (within a few hundred yards). They are flowing wells, pumping not being necessary to secure a production estimated at 6,00 to 8,000 bbls. per day of 24 hours. Two of these wells produce both grades of oil—paraffin base and asphalt base—the latter coming from the lower level and not exceeding 3 per cent in suspension. The gravity is 35.5 degrees Baume scale.

Owing to the lack of transportation means, the production of the Tropical Oil Co. has been very limited, as can be seen by the following figures.

	Barrels
In 1921	66,750
In 1922	222,786
In 1923	424,870
Eestimated for 1924	500,000

Oil Legislation

Probably the most important development in the Colombian oil situation during the past has been the passage by Congress of a new petroleum law, which went into effect January 31, 1923. The principal points of interest in which this new law changes or improves the previous one are as follows:

Law 120 of 1919 provided that one person or corporation could not acquire more than three exploitation zones of 5,000 ha. each, and royalties were based on a sliding scale, to wit: 6 per cent royalty on lands 400 kilometers or more, from the ocean; 8 per cent on lands 200 but not over 400 kilometers from the ocean and 10 per cent royalty on lands located less than 200 kilometers from the ocean. Rentals were fixed at 10 centavos per hectare for the first year, and $1 (one peso) yearly thereafter. Under this law the term of the lease was fixed at 20 years and, at the discretion of the Government, could be extended for 10 years additional. After the expiration of the lease and its corresponding extension, the machinery and other material placed upon the property would vest in the Government. A bond of 20,000 pesos was also required of the lessee to guarantee faithful performance of his contract.

Under the new law, No. 14 of 1923, one lessee may acquire, within one department, by direct lease up to 15,000 hectares, whether in one or more lots, each lot to be covered by a separate contract. Exploitation zones may not exceed 5,000, nor be less than 1,000 hectares, and may be in any shape except that the greatest length cannot be 2½ times the greatest width. Under the new law the term of the lease is fixed at 20 years, with the right to procure an extension for an additional 20 years at a cost of 5,000 pesos for each year of extension as may be agreed upon between lessee and the Government. A land tax of 10 centavos per hectare annually for the entire period of the lease contract is provided; $2 (two pesos) per hectare annually for the use of the surface area, within 500 meter radius around oil wells, refineries, etc., and 10 centavos per hectare annually shall be paid after the third year on permits of exploration. The new law provides for diligent operations after discovery of petroleum, and lease contracts are subject to cancellation if operations are suspended one whole year, except in cases of "force majeure." The Government may, however, grant a five-year extension for good cause shown. The sliding scale royalties from 6 to 10 per cent are the same as provided in the old law, but the provision for a $20,000 (peso) bond is annulled.

On August 30, 1923, a pipe line concession was granted to the Andean National Corp. of Ottawa, Canada. This company was given the right to construct a line, with all necessary feeders and pump stations, etc., from a point anywhere between Bahia Honda and Cispata Bay on the Caribbean coast, for a distance of 800 kilometers up the Magdalena River. This provides for the immediate construction of the first 400 kilometers and leaves the balance more or less provisional.

While the concession nominally provides for a common carrier, its aspect is such as to lead one to doubt whether an independent producing interest could demand that its oil be transported pro rata, should the line be reasonably full of the company's oil at the time. The pipe line company must, however, provide transportation and storage for the equivalent of 18 hours per month full capacity for the carrying of the Government's royalty oil. This obligation is not cumulative from month to month.

The concession runs for 50 years, with the Government's option to extend beyond that time if it so elects, giving notice five years previous to expiration; the company to retain ownership in all material and equipment. There are the usual provisions for roads and telephone lines, and the requirement to give preference to native Colombian employes. The company must connect with all independent sources of oil supply if in commercial quantities, and if it fails to do so, and the connecting line is built by others, then the pipe line company must give them connection to its system.

Americans Welcome

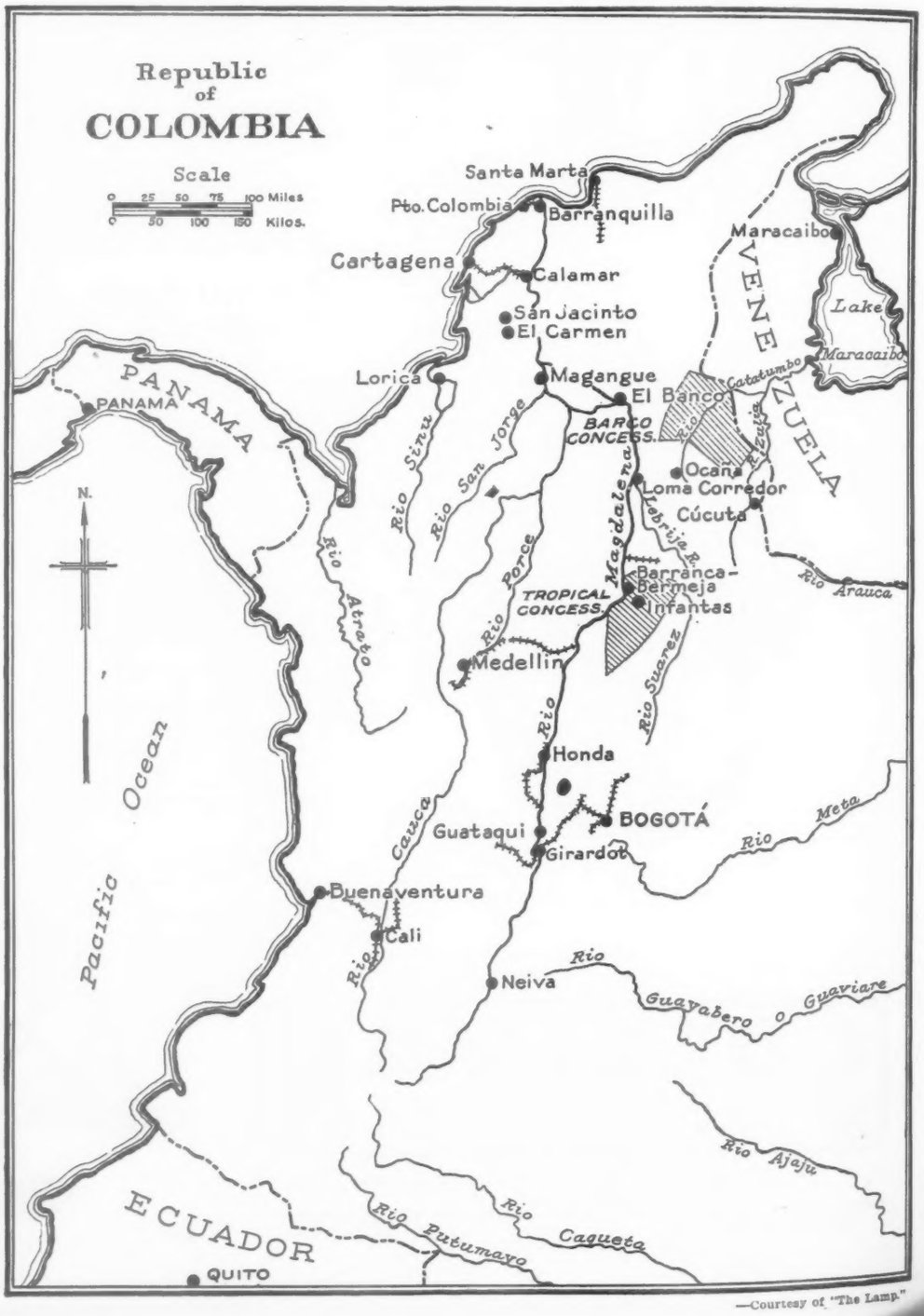
The maximum rates allowed are as follows:

Kilometers		
0-100	$0.40	per barrel of 42 gallons
100-200	0.45	per barrel of 42 gallons
200-300	0.50	per barrel on 42 gallons
300-400	0.55	per barrel of 42 gallons
400-500	0.60	per barrel of 42 gallons
500-600	0.65	per barrel of 42 gallons
600-700	0.70	per barrel of 42 gallons
Con'ting lines	0.30	per barrel of 42 gallons

These rates should allow the company sufficient compensation especially in view of the last rate of $0.30 for connecting lines. It is understood that the preliminary surveys and estimates for this pipe line have already been made.

With such an abundance of oil, maximum guarantees offered to capital, cheap and abundant labor, with the proposed pipe line that will carry the petroleum from the interior to the coast, and last but not least, with the advantage of its insuperable geographic position—only 300 miles from the Panama Canal—it is doubtless that Colombia will soon be a petroleum producing center of enormous activity.

We call the attention of American capitalists to that country, which so far has not received the proper consideration. We feel certain that the money and efforts invested in Colombia will bring magnificent results.



—Courtesy of "The Lamp."

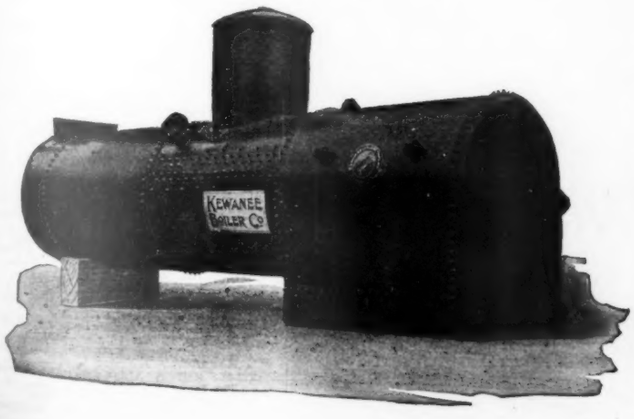
KEWANEE

Oil Country Boilers

The man who fires them will tell you they are the easiest firing boilers in the field. And he will tell you that an abundance of *dry steam* flows from the capacious dome. And he will tell you that they will handle a good sized overload without a "whimper." That's why *he* prefers a Kewanee.

And the man who buys them will tell you that they are dependable. Hence when he buys a Kewanee his boiler problem is solved. He doesn't have a lot of repair bills forever chasing him. And if he happens to want to sell a Kewanee after he has used it, its sturdy construction, and well known merit, enable him to get a mighty good price for it. And that's why *he* prefers it.

Wherever a dependable flow of steam is needed—at lowest possible cost—you will find Kewanee Boilers.



Constructed in accordance with the Code adopted by the A. S. M. E.
Conservative rating means large overload capacity.
Abundance of dry steam flows without fluctuation from capacious dome.
Easiest fired boiler in the field.

KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS

Makers of Steel Boilers, Steel Tanks, Water Heating Garbage Burners, Tabasco Water Heaters

Sold by International Supply Co., Tulsa.

District Sales Offices:

Fort Worth, Texas Ardmore, Okla. Denver, Colo.
Casper, Wyoming Great Falls, Mont.

Branches in All Prominent Oil Fields

American Companies Exporting Oils

World Wide Marketing of Petroleum and Its Products by Leading Exporters and Interior Refineries Supplying Foreign Demands

By L. M. Fanning

Foremost among American companies which export petroleum products are the Standard Oil Co. (New Jersey) and the Standard Oil Co. of New York, both having been pioneers in extending foreign markets. The statement has been made by Walter C. Teagle, president of the New Jersey company, that it accounts for 25 per cent of the export trade. Other large companies which export oil include the Vacuum Oil Co., Sinclair Consolidated Oil Corp., The Texas Co., Sun Oil Co., Atlantic Refining Co., Tide Water Oil Co. and Pure Oil Co. Practically all the large California companies are active in export trade, including the Union Oil Co., Shell Co., General Petroleum Corp., Associated Oil Co. and Standard Oil Co. (California). Many other companies, as shown in the list of exporting companies accompanying this article, either directly ship and market petroleum products abroad or are interested in export trade through manufacture of products for export.

The Standard Oil Co. (New Jersey) markets in continental Europe, Canada, South America and the West Indies and in the Scandanavian countries. This it does directly. It sell in Great Britain to the Anglo-American Oil Co., Ltd., the largest marketing company there, as well as to other buyers who purchase in the United States. It also sells to other companies, such as the Standard Oil Co. of New York and the Vacuum Oil Co. and a large number of wholesalers, which market the products in countries other than those mentioned. Taking the New Jersey company's direct exports and sales to other companies for export, the total, as stated, amounts to something like 25 per cent of the whole export movement.

Affiliations Abroad

In many of the European countries where the company markets, it has built up marketing and distributing equipment and operates as partners with local capital, the New Jersey company owning a stock interest in the local companies and they possessing the facilities. Among these affiliated companies, some of which are also direct producing, refining and marketing organizations, are the Imperial Oil, Ltd., and International Petroleum Co., in Canada; American Oil Co., which markets in Holland, Belgium and a part of Germany; Deutsch Amerikanische Petroleum Gessellschaft, marketing in Germany; Det Danske Petroleums Aktieselskab, marketing in Noway, Sweden, Denmark and Iceland; Skandinavisk Petroleums Aktieselskab and Norsk Amerikansk Petroleumscompagni, also marketing in Scandinavian countries; Aktie. Nobel-Standard i Finland, marketing in Finland; Bedford Petroleum Co., marketing in France, Belgium, Holland Spain, Italy and Switzerland; Societe Espagnol D'A. et D'A., marketing in Spain; Societa Italo-Americana del Petrolio, marketing in Italy; West India Oil Co., marketing in the West Indies and Central and South America.

Standard of New York

The Standard Oil Co. of New York engages in foreign business largely in the Far East and the Near East. The countries in which it has built up sales organizations and is actively marketing are Japan, Korea, Manchuria, North China, South China, the Philippines, Australasia, Indo-China, Netherlands, Indies, Singapore, Straits Settlements, Burmah, British India, Ceylon, Persian Gulf, Turkey, Bulgaria, Yugo-Slavia, Greece, Syria and Palestine. Its principal business is in kerosene although it markets all the products or certain of the products in the different countries according to demand. The company estimates that in its trade of kerosene in foreign countries it does about 34 per cent of the total business, compared to 66 per cent for all its competitors. Through the introduction in China of a simple lamp that was given away at first and later sold at cost, the company now sells 2,000,000 lamps there annually that have paved the way for the large expansion of its kerosene trade in that country. The company's business there has increased from about 13,000,000 gallons in 1903 to over 120,000,000 gallons annually. Unlike the Standard Oil Co. (New Jersey) the New York company markets its products in foreign countries directly. It maintains foreign stations and has its own sales organization in the different countries, maintaining a school in New York for the training of foreign employes.

Vacuum Oil Co.

The Vacuum Oil Co. maintains selling organizations in virtually all parts of the world, marketing principally lubricating oils. Listed among its foreign connections are Vacuum Oil Co., Bombay, for India, Burmah and Ceylon; Vacuum Oil Co., Buenos Aires, for Argentina and South America; Vacuum Oil Co., Cairo, for Egypt and territory; Vacuum Oil Co., Copenhagen, for Denmark and Norway; Vacuum Oil Co., Helsingfors, for Finland; Vacuum Oil Co., Hong Kong, for Hong Kong, Philippine Islands, Straits Settlements and Dutch East Indies; Vacuum Oil Co., Kobe, for Japan and Korea; Vacuum Oil Co., Lisbon, for Portugal, Canary Islands and Morocco; Vacuum Oil Co., R. T., for Austria, Hungary, Greece, Balkan States and Turkey; Vacuum Oil Co. of South Africa, Ltd., for all South Africa and Mauritius; Vacuum Oil Co., S. A. I., for Italy; Vacuum Oil Co., Ltd., for England; Vacuum Oil Co., Prop., Ltd., for all Australia and New Zealand; Russian Vacuum Oil Co., Ltd., for Russia and West Siberia; Vacuum Oil Co., S. A. F., for France, Belgium, Holland, Spain, Switzerland and Algiers; Vacuum Oil Co., A. B., for Sweden.

Sinclair Consolidated

The Sinclair Consolidated Oil Corp. has been expanding its foreign business, and the records show that it is making bulk shipments to England, France, Germany, Italy, Scandinavia and China and that it does a barrel business in many parts of the world. It owns a controlling interest in the Compagnie des Huiles Sinco, which is a marketer for lubricating oils in France, and it owns an interest in the Union Petroleum Co. of Belgium, which is a marketer of lubricating oils, kerosene and gasoline.

The Texas Co.

The Texas Co. markets petroleum products in Europe, Africa, Asia, South America and the West Indies, in some countries directly and in others through agents or merchants. The Texas Co.'s foreign marketing subsidiaries include The Texas Co., South America, marketing in Brazil; The Texas Co., Porto Rico, marketing in Porto Rico; The Texas Co., West Indies, marketing in Cuba; Texas Oil Co., Ltd., marketing in England and Scotland; The Texas Co., S. A. F., marketing in France; Continental Petroleum Co., marketing in Belgium, Luxemburg and Holland; The Texas Co., A. X. S., marketing in Denmark; Wahlunds Mineralolje, A. B., marketing in Sweden; The Texas Co., S. A. I., marketing in Italy; The Texas Co., South Africa, marketing in Australia, Tasmania and New Zealand; The Texas Co., Philippine Islands, marketing in Philippines.

Atlantic Refining Co.

The Atlantic Refining Co. sells all the different petroleum products for export but in many cases does not sell directly abroad. While the company has sales representatives in several of the European countries, nearly all of its sales are to buyers for export, where the delivery is essentially completed on this side. Company sales representatives are stationed in Hamburg, Rotterdam, Zurich, Copenhagen, Paris where Spanish and other portions of Africa are included in the territory; Uruguay, Buenos Aires, Italy, and New Zealand. The Atlantic Refining Co. of Brazil, is the marketing subsidiary in that country. About 20 per cent of the company's total sales for export are disposed of directly through agents and the balance is sold to buyers in this country, including the Standard Oil Co. (New Jersey) and the Standard Oil Co. of New York, which companies export the products.

Tide Water Oil Co.

The Tide Water Oil Co. has agents in South America, Australia, New Zealand, Japan and France. It ships to other countries, and does a large business in lubricating oils throughout the world. From time to time it sells to buyers for export.

List of Exporters

The following lists of exporters of petroleum and petroleum products from the United States to foreign countries by coastal export divisions, including the port of export:

Gulf Ports

Sinclair Ref. Co., New Orleans, La.
Marland Oil & Ref. Co., Galveston, Tex.
Cosden & Co., New Orleans, La.
Dingwall Pet. Co., Houston, Tex.
Tiona Pet. Co., New Orleans, La.
Carson Pet. Co., New Orleans, La.
Refiners Export Oil Co., Galveston, Tex.
Louisiana Ref. Co., New Orleans, La.
Chalmette Ref. Co., New Orleans, La.
Galena Signal Oil Co., Houston, Tex.
The Texas Co., Port Arthur, Tex.
Pan-American Pet. Co., New Orleans, La.
Gulf Ref. Co., Port Arthur, Tex.
Standard Oil Co. of New Jersey, Baton Rouge, La.
Standard Oil Co. of Louisiana, Baton Rouge, La.
Magnolia Pet. Co., Beaumont, Tex.

North Atlantic Ports

Standard Oil Co. of New Jersey, New York and Baltimore.
Vacuum Oil Co., Inc., Philadelphia, Pa.
Pure Oil Co., Philadelphia, Pa.
Sun Oil Co., Philadelphia, Pa.
Atlantic Ref. Co., Philadelphia, Pa.
Tidewater Oil Co., New York, N. Y.

Pacific Coast Ports

Union Oil Co. of California, Wilmington, Cal., San Pedro, Cal.
Shell Co. of California, Martinez, Cal., Wilmington, Cal.
General Pet. Corp., Los Angeles, Cal.
Associated Oil Co., Inc., Avon, Cal.
Standard Oil Co. of California, Richmond, Cal., El Segundo, Cal.

Refiners Supplying Exports

The following lists interior refineries which supplied gasoline, gas oil, kerosene and lubricating oil in 1923 to independent exporters, giving location and capacity of their plants:

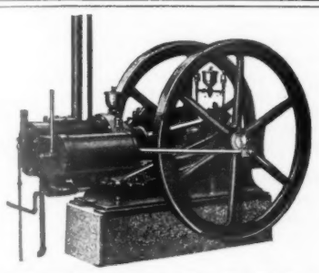
Name and location—	Cap'y
Alexandria Ref. Co., Alexandria, La.	600
Allied Ref. Co., Okmulgee, Okla.	1,200
American Ref. Co., Wichita Falls, Tex.	5,000
Barnsdall Ref. Co., Barnsdall, Okla.	3,000
Bolene Ref. Co., Enid, Okla.	3,600
Caddo Central Oil & Ref. Co., Shreveport, La.	8,000
Cameron Ref. Co., Ardmore, Okla.	2,500
Champlin Ref. Co., Enid, Okla.	30,000
Clayton Ref. Co., Dallas, Tex.	3,500
Cosden & Co., Tulsa, Okla.	40,000
Cushing Ref. Co., Blackwell, Okla.	1,700
Cushing Ref. & Gasoline Co., Cushing, Okla.	1,800
Coleman-Nelson Corp., Tulsa, Okla.	2,500
Canfield Ref. Co., Yale, Okla.	600
Cross Ref. Co., Smackover, Ark.	2,000
Derby Oil Co., Wichita, Kans.	5,000
Empire Refineries, Okmulgee, Okla.	2,500
Empire Refineries, Ponca City, Okla.	6,000
Eldorado Ref. Co., Eldorado, Kans.	4,000
Globe Oil & Ref. Co., Blackwell, Okla.	6,000
Grant Oil Co., Augusta, Kans.	2,000
Grayburg Oil Co., San Antonio, Tex.	1,000
Hewitt Ref. Co., Wilson, Okla.	1,500
Imperial Ref. Co., Ardmore, Okla.	7,000
Indiahoma Ref. Co., Okmulgee, Okla.	10,000
Iowa Park Prod. & Ref. Co., Iowa Park, Tex.	1,500
Inland Ref. Co., Cushing, Okla.	2,000
Jones, Elliott & Co., San Antonio, Tex.	2,000
Kettle Creek Ref. Co., Eldorado, Ark.	4,000
Kanotex Ref. Co., Arkansas City, Kans.	5,000
Lion Ref. Co., Eldorado, Ark.	8,000
Lone Star Ref. Co., Wichita Falls, Tex.	2,000
Louisiana Oil & Ref. Co., Shreveport, La.	9,000
Lorraine Ref. Co., Bristow, Okla.	3,500
Marland Oil Co., Ponca City, Okla.	12,000
Midland Ref. Co., Eldorado, Kans.	1,000
Miller Pet. Co., Humboldt, Kans.	2,000
Miller Pet Co., Wichita Falls, Tex.	2,500
Montrose Oil Ref. Co., Fort Worth, Tex.	6,000
Meridian Ref. Co., Okmulgee, Okla.	3,000
Mid-Co. Pet. Co., Tulsa, Okla.	6,000
National Oil & Ref. Co., Coffeyville, Kans.	6,000
Noble Oil & Gas Co., Burkburnett, Tex.	3,500
Nyanza Ref. Co., Wilson, Okla.	3,500
Oklahoma Prod. & Ref. Co., Muskogee, Okla.	3,000
Orient Pet. Co., Wichita Falls, Tex.	1,500
Owenwood Oil Corp., Burkburnett, Tex.	2,000

(Continued on Page 104)

STANDARD OIL CANS FOR SALE IN JAVA

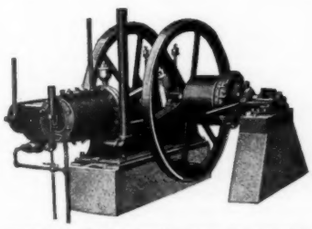
—Photo by De Cou (c) Ewing, Galloway, N. Y.
Former oil containers make popular water holders.

REID OIL FIELD MACHINERY



Left Hand Sistersville Type Gas Engine

For use on pumping wells where dependable operation is essential.

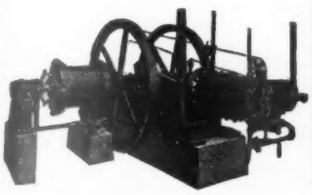


Right Hand Sistersville Type Gas Engine

Reid Engines will give years of satisfactory, reliable service.

Type U Disc Geared Power

A medium capacity geared power which carries the rod lines close to the ground.



Left Hand Reverse Gear Type Gas Engine

For handling rods, tubing, pulling casing and drilling wells, they are fast, reliable and economical.

Since 1895

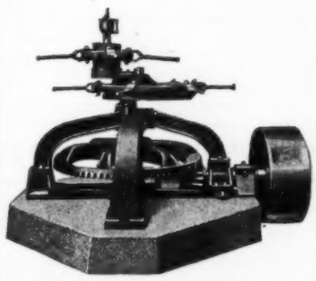
For nearly thirty years, the Joseph Reid Gas Engine Company has been developing their Oil Field Machinery. Manufacturers of the *first oil country gas engine* and of the *first reverse clutch* used in the Oil Country, we have been constantly developing and improving our designs.

Reid Gas and Oil Engines, in sizes of from 15 to 40 HP, can be furnished with one way or reverse clutches. Reid Gas and Oil Drilling Engines because of their economy without sacrifice of speed and power are rapidly replacing the steam engine.

Among the five types of geared powers and two types of band wheel powers will be found a power to suit any condition.

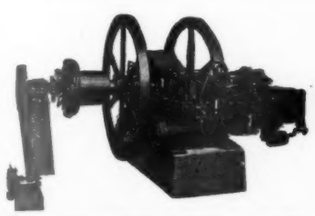
Reid Receiving Boxes and Manifolds for refineries are made in special and standard sizes.

For a complete description of the Reid line of Oil Field Machinery, write for our Bulletin No. 29.



Type S Eccentric and Disc Geared Power

The eccentric and disc enable the wells to be readily balanced on the power.



Left Hand Sistersville Type Oil Engine

Operates on fuel oil or high grade crude oil and can be furnished with either one way or reverse clutch.

All-Metal Band Wheel Power

The large number of these powers in operation testifies for their ability to handle heavy work. Wheel diameters of 14, 16, 18, 20 and 24 feet.

Type PG Underpull Geared Power

Furnished with one or two eccentrics this power will be found strong and easy running.

JOSEPH REID GAS ENGINE COMPANY, Oil City, Pennsylvania, U. S. A.

Branches and Agencies: Marietta, Ohio; Logan, Ohio; Newark, Ohio; Fort Recovery, Ohio; Shreveport, La.; Charleston, W. Va.; R. B. Moore, Bolivar, N. Y.; Bradford Supply Co., Robinson, Ill.; Frick & Lindsay, Bradford, Penna., and Kentucky Distributors; S. R. Shoup, 708 Pacific Electric Bldg., Los Angeles, Calif., Oklahoma, Kansas, Texas, Arkansas and Wyoming; Frick-Reid Supply Co., Tulsa, Okla., and Branches. Branch Shop: Tulsa, Okla.

Growth of World's Bunkering Ports

Enormous Expansion of Fuel Stations Since the War Established the Superiority of Oil Burning Ships. Keen Competition

Sir Frederick W. Black, of the Anglo-Persian Oil Co., estimates that the world's consumption of fuel oil for ships' bunkers (mercantile) were approximately 9,000,000 tons (63,000,000 bbls.) in 1920, and about 11,000,000 tons (77,000,000 bbls. in 1923, excluding the fuel oil consumption of the world's navies or war fleets. The oil bunker supplies of 1923 were effected, according to his information, approximately as follows:

At ports of the United States, Canada, Mexico, West Indies, etc., about 6,500,000 tons (45,500,000 bbls.)

At United Kingdom ports (imported oil), about 1,000,000 tons (7,000,000 bbls.)

At other European ports, Africa, India, Australia, Dutch East Indies, Malay Peninsula, Japan, etc., about 1,500,000 tons (10,500,000 bbls.)

So far as the estimate covers the Western Hemisphere it is probably too conservative, as figures published by the American Petroleum Institute show that 63,129,000 bbls. of fuel oil were delivered for ships' bunkers at United States ports and at United States Insular possessions alone in 1923, not including United States Navy consumption. According to the same authority 41,700,000 bbls. were delivered at the same ports in 1920.

Growth Since the War

These figures give some idea of the extent to which the use of fuel oil for vessel propulsion has grown, and are the more striking when it is considered that most of the development of this use of petroleum has dated since the start of the World War. To supply the world's merchant marine with its fuel oil requirements, bunkering stations have been established in all parts of the world. Regarding world's oil bunkering stations, Sir Frederick W. Black, says in his paper on "Bulk Distribution of Oil-Depots and Storage" read before the Empire Mining and Metallurgical Congress, London:

"The great progress that has been made in the provision of oil tanks at the world's bunkering ports may be gauged from an examination of the lists published in some of the oil and shipping journals, etc. In such lists a few particulars are occasionally given in regard to the tank storage capacity at various ports and also where special qualities of oil for Diesel engines are kept. These, however, are matters in regard to which shipowners are able to inform themselves by inquiry beforehand for particular voyages, and prior arrangements are usually made to insure that the necessary supplies shall be available. Oil burning ships as a rule need fewer points of supply than coal burners. Fuel oil supplies are now stocked world-wide, although the question of available quantities and qualities at particular times and places may still require previous ascertainment to a greater extent than in the case of coal supplies, in order to prevent delay, inconvenience and disappointment.

Coal Bunkering Ports

"The world's coal bunkering ports are so numerous and widespread that it is unnecessary to either specify the total number or even a few of their names. For commercial oil bunkering ports a rough approximation to the total number (excluding a number of small depots) is given. The variations, from one year to another, and from one port or coast to another, of requirements of coal or oil fuel for bunkers, are of course very considerable, depending on the extent of cargo carrying and the direction in which cargoes are moving.

"The total of about 64,000,000 tons of coal shipped as overseas cargoes from British ports is utilized in the importing countries for bunkers, railways, industrial plants, gas works, etc.

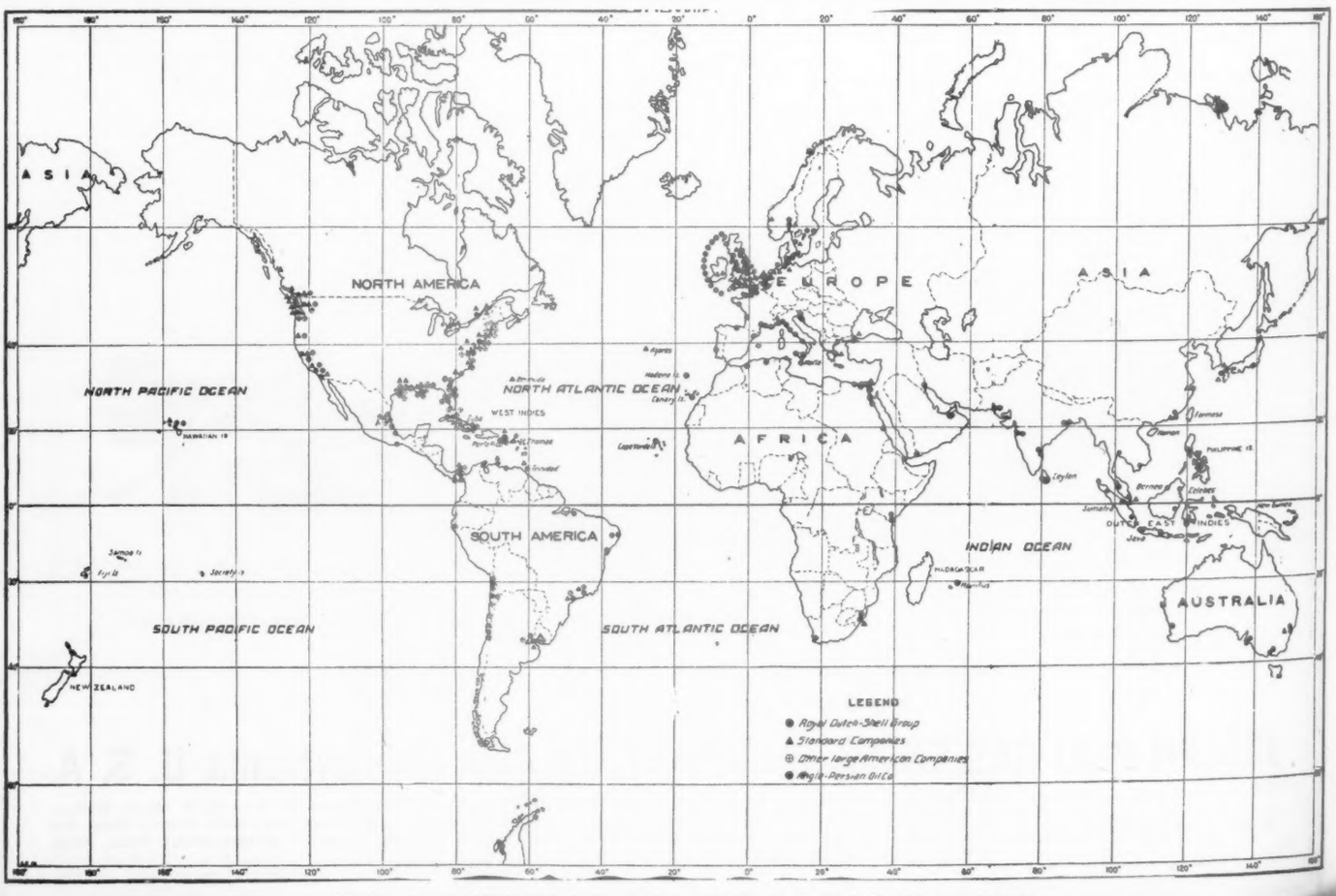
"The world's consumption of coal for bunkers for the year 1922 may be taken at about 32,000,000 tons, of which rather more than 18,000,000 tons were supplied at ports in the United Kingdom (this figure is additional to that of the coal shipped as "cargoes") and about 6,000,000 tons at ports of British Dominions overseas, e. g., South Africa about 1,300,000, India 1,900,000, Australia and New Zealand 1,600,000 tons. In the case of the principal British overseas dominions the bunker supplies are mainly from coal mined locally. Many coaling ports in Europe and on the main ocean routes are supplied with coal from either the United Kingdom or, in the East, from other British sources of supply. The balance of the world's coal bunkering total is principally made up of supplies of about 4,250,000 at ports of the U. S. A. of America and 2,250,000 tons at Japanese ports and of British, American, Japanese and other coal at ports of countries that have no coal production of their own. Both U. S. A. and Japan have a considerable export of coal in cargoes for general industrial purposes, including bunkers. The world's present-day coal production and distribution (including coal for bunkers) do not in the aggregate exhibit any very material difference from the figures of years immediately before the war; e. g., the United Kingdom then exported about the same total of 64,000,000 tons as cargo, and shipped at United Kingdom ports about 18,000,000 tons for overseas bunkers.

Oil Stations World Wide

"There are today upwards of 300 oil bunkering stations (excluding those of minor importance) in various ports of the world. There is hardly a port of any standing which does not possess oil supply facilities in addition to those for coal. There are some 25 ports in the United Kingdom with oil bunkering equipment and about 40 in other parts of the British Empire. Great Britain also owns or has an interest in a number of oil installations elsewhere. Other Northern and Western European countries possess about 40; there are about 30 in the Mediterranean and Black Seas; America, Canada, Mexico, West Indies, etc., account for some 80 or 90; and the remainder are to be found in the Red

(Continued on Page 150)

LOCATION OF OIL BUNKERING STATIONS OF ROYAL DUTCH-SHELL GROUP, STANDARD AND OTHER LARGE COMPANIES



Map from report of Federal Trade Commission on Foreign Ownership in the Petroleum Industry.

ECHO

Mythology is so full of modern application that we who love the myths will unconsciously apply it in business and in life.

Echo loved the woods and hills, and was a favorite of Diana, whom she attended in the chase. But Juno condemned her to the loss of voice except for reply. Think of having a wife that could not, with the usual glassy stare, say, "Come here, old top, until I smell your breath." Wouldn't that be a dream? Echo could only imitate—you know the type—you have them to contend with in your own business.

Narcissus was the embodiment of concrete beauty, a modern jelly-bean, as it were. When he saw his image in the river he ruminated thusly, "My, you are a pretty boy," and stroked his velvet cloak with his long, tapered fingers.

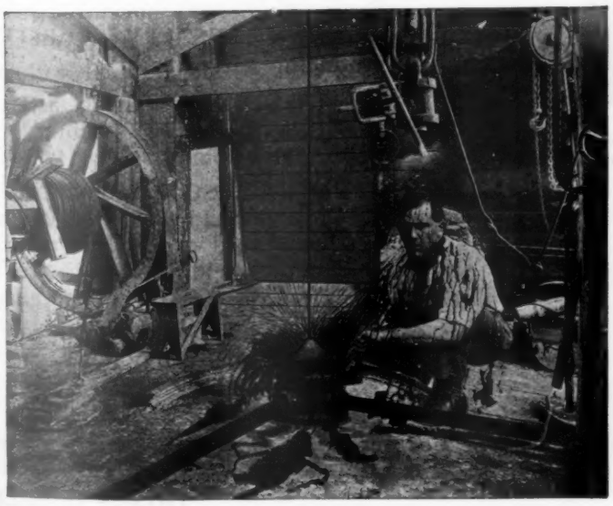
Echo fell for him because he parted his hair in the middle and used plenty of sta-comb. She threw her arms around his neck, but he cursed her and threw her from him saying, "I would rather die than thou shouldst have me," and Echo answered, "Have me." A lawyer took the case and on those words, "Have me," won a great breach-of-promise suit.

You will have to commend the judgment of Narcissus, vain as he was, for refusing the echo, the photograph, or the imitation.

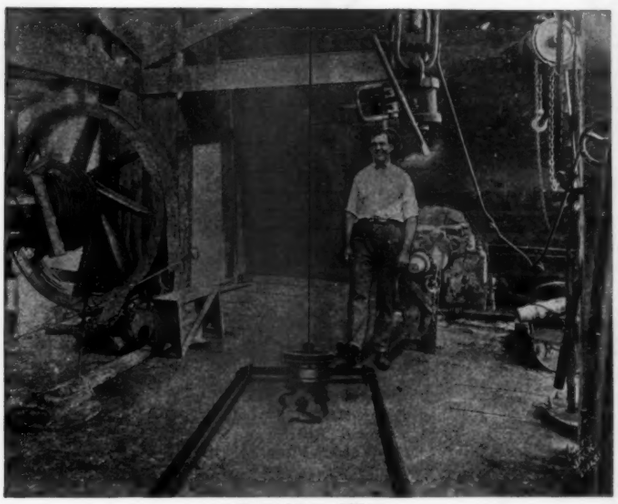
The "Limit Plug" and the "Red Packer" are original products of the Robinson Packer Company. Echoes are found in hollow or empty caverns, physically, intellectually, or industrially.

The Robinson Packer products are to be found always at your supply stores.

How long will it be before they imitate this new thought? Our new CASING HEAD LATCH will save both time and oil. Let us demonstrate it for you.



The Old Method



The New Way

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Factory: Coffeyville, Kans. Phone 66
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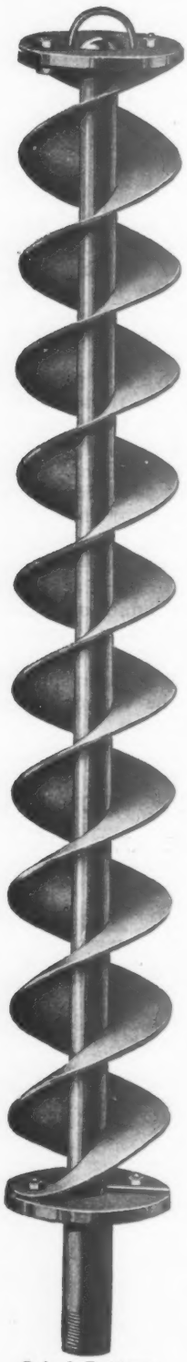
Branch Blackwell, Okla. Phone 606

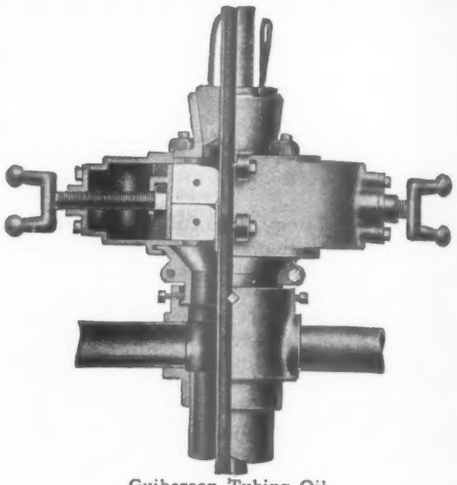
Map from report of Federal Trade Commission on Foreign Ownership in the Petroleum Industry.

Guiberson Swab



Spiral Bottom Water Plug

Guiberson Underreamer



Guiberson Tubing Oil Saver

EXPORT

On Famous Guiberson

Every Guiberson specialty is now a recognized NECESSITY in the World's oil-producing activities.

The GUIBERSON Swab, after a year and a half on the market, is doing *over half* the World's swabbing.

The GUIBERSON Tubing Catcher has educated the World to use tubing catchers, and is recognized everywhere as the "old reliable," in its field.

The GUIBERSON Control-Head Packere is the ONLY packer which can be run in the well against heavy flows.

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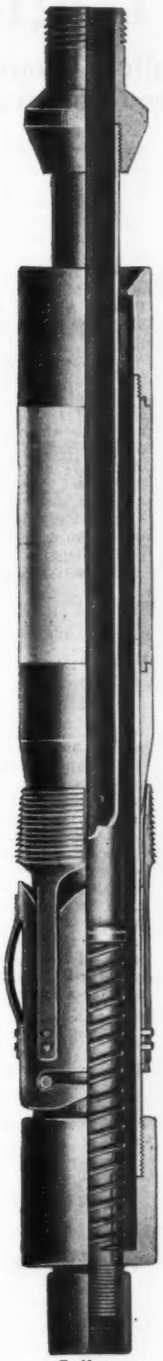
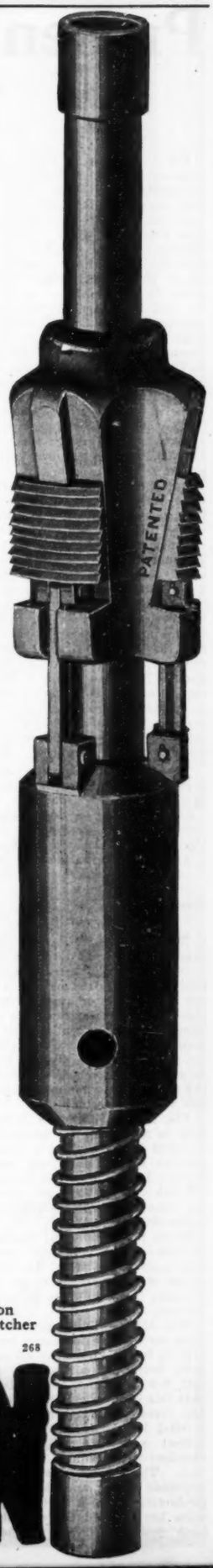
THE GUIBERSON

Guiberson Rotary Tool Joint Tong

Guiberson-Mills Casing Tong



Guiberson Control Head Packer



Guiberson Tubing Catcher

SERVICE

Patented Specialties

The GUIBERSON Spiral Bottom Water Plug is the ONLY plug which does not depend on friction, but takes a screw-like grip.

The GUIBERSON Underreamer is ALONE in possessing the actual rigidity and strength of a drilling bit.

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CORPORATION

Present Progress In Persian Oil Fields

Geological Characteristics and Report of Operations by Sir Charles Greenway Chairman of the Anglo-Persian Oil Co.

Oil indications in Persia characterize rocks of all geological ages from the precretaceous to pliocene. They are probably, says R. K. Richardson, A. R. C. Sc., most abundant in the clastic and secondary limestones of the Lower Fars, at at Maidan-i-Naftun and Naft Khaneh, and near the Lower Fars—Asmari boundary, as at Dasht-i-Qil. Near Malamir they occur in the Bakhtiari series, while in the Deh Luran-Dalpari region they characterize most of the rocks from the Lower Fars to the Siah Kuh limestone. At Imam Hassan they occur in cretaceous shales. At Dareh-i-Qil they occur near the Middle-Lower Fars junction and near Champeh in the Persian Gulf they occur along the plane of intrusion of a saline plug.

They are usually found in limestones, though they have often been observed in gypsum, sandstones, conglomerates and shales.

As to the origin of the oil in Persia, there are two alternative views: (a) an indigenous origin in the Asmari limestone; (b) a cretaceous origin followed by migration into the Asmari limestone. The upper Fars has also been suggested as a source of origin, but this view has not at present much evidence.

The Asmari limestone or its equivalent in other areas provides, together with over lying Fars limestones, the most abundant and the most prolific oil shows in the country, and at Maidan-i-Naftun the Asmari limestone yields oil in enormous quantities. It is a highly organic rock composed almost entirely of foraminiferal remains, and bulk for bulk is uniformly far richer in organic matter than any other formation examined.

The Asmari limestone is underlain by a thick body of blue shales, which would function as an impervious series obstructing migration from below, and is overlain by an impervious cap of Lower Fars gypsum, shales and anhydrite.

As to the alternative view that the oil originated in cretaceous shales, there are many difficulties in the way of its acceptance.

Anticlinal Area

The Maidan-i-Naftun Oilfield comprehends an anticlinal area in Far rocks with a general axis running northwest, southeast. Over the main area of the fold the Lower Fars or gypseous series is exposed. The northeastern flank of the anticline is relatively gentle while the southwestern flank is completely obscured by an overthrust, the Tembi Fault. The Lower Fars gypsum has been driven over the steep limb in the manner indicated in our study of tectonics.

The Asmari limestone is met by the drill in most wells at depths from 1,000 to 3,000 feet, according to their positions relative to the anticlinal Asmari mass below. Indicators of the approach to the oil rock are usually slight gas or oil, and the presence of white powdered anhydrite in the drilling samples.

There are copious oil seepages on the Maidan-i-Naftun oil field which almost invariably exude from the detrital limestones of the gypseous series. Oil shows are also found in Fars rocks above this horizon.

The detrital limestones of the Lower Fars series were for many years considered to be the productive oil rocks of the field. Investigation, however, during the last few years has conclusively proved that this is not the case. The microscope has revealed the oil rock to be, not a detrital limestone, but a highly foraminiferal rock of non-clastic character identical with the rock at Asmari Mountain. The supersession of the detrital limestone theory and the proof that the productive oil rock is the Asmari limestone has changed the outlook of petroleum geology relative to the oil field, and a very much larger productive area is assured than was formerly thought to be the case.

Maidan-I-Naftun Oil Field

The richness and sustained production of this remarkable oil field make it one of the most important of the world's petroleum resources. It is situated approximately 140 miles north, northeast of the Port of Abadan, on the Shattel-Arab, to which place oil is transported by pipe line.

The boundaries of the productive area are being continually widened by prospect wells, but the extent of its untapped reserves is still unknown. Production figures, representing the volume of oil extracted from a relatively small number of wells, indicate the richness of the territory. The figures, however, are merely a measure of the progress of pipe line, refinery and tanker construction, which afford at present the only limits to productivity:

Total Annual Production, Maidan-I-Naftun

Year	Crude Oil Gallons	Equivalent Tons
1912-13	21,896,714	82,629
1913-14	74,156,141	279,831
1914-15	101,889,665	384,489
1915-16	121,786,808	459,569
1916-17	174,544,131	658,657
1917-18	243,196,050	917,721
1918-19	293,199,729	1,106,414
1919-20	367,104,918	1,385,301
1920-21	468,693,795	1,768,656
1921-22	625,066,465	2,358,741
1922-23	788,209,802	2,941,081

Anglo-Persian Operations

The latest information regarding operations in Persia is contained in the report of Sir Charles Greenway, Bt., chairmain of the Anglo-Persian Oil Co., Ltd., to the annual meeting in London three weeks ago. He said:

"The production of crude from our main Persian fields is today at the rate of 4,500,000 tons per annum—the maximum quantity we are in a position at the moment to dispose of—all of this being produced from flowing wells. In addition to the wells from which we are producing we have a large number of others drilled in and capped, and ready to yield their oil in equal abundance, at any time that it may be required.

"We have again considerably extended the area of the proved territory in our main fields. At any point of this area we can now put down a bore with the practical certainty of tapping a prolific well, and the wells from which we have so far been obtaining our production still continue to maintain their large yields. I have heard that we have been described as a 'one well company.' This is no doubt due to what I have told you from year to year about our now famous F-7, which has now given a total yield of 6,000,000 tons, and is still maintaining the same high rate of production. But this is only typical of the wells we have opened up all over our proved territory, and it has already been far surpassed by other wells—for example, B-17, situated 1¾ miles from F-7, which flows at the rate of 18,000 bbls. per day, or roughly 1,000,000 tons per annum. These large producing wells are, I may explain, not located in any one particular spot, but are spread all over our proved territory, and as we extend this territory, as we are constantly doing by putting down fresh wells at distances of about half a mile from each other, we continue to strike wells of the same prolific character. In order that you may be better able to follow the course of the development of our production, I will continue the table of figures which I gave you last year—namely: In 1918-1919 our production was 1,106,415 tons; in 1919-1920, 1,385,301 tons; in 1920-1921, 1,743,557 tons; in 1921-1922, 2,327,221 tons; in 1922-1923, 2,959,028 tons; in 1919-1920, 1,385,301 tons; in against my estimate of 3,775,000 tons, and in the current financial year it should be between 4,250,000 and 4,500,000 tons.

Produce 10,000,000 Tons

"I may add that were we to tap all the wells already opened up we could at once bring our production up to 10,000,000 tons per annum, or more, and that by drilling in the wells which have already been carried down to the caprock we could still further largely augment our production within a few months. But it would be extremely unwise to produce at this high rate until we have ascertained more definitely the extent of our reserves, and in any case it could not be done without a corresponding increase in our pipe lines, refineries, tankers, and distributing organizations—apart from the fact that the sudden producing of this large extra quantity of oil would undoubtedly cause serious disturbance to the world's markets. Therefore, we have come to the conclusion that in this respect our soundest policy is to "festina lente," and only to provide for this bigger production when we have satisfied ourselves, first, that we have ample reserves of oil to justify producing at this higher rate, and, second, that we can market the additional quantity at remunerative prices. As to the first point, we are daily getting nearer to the position where we shall be able to increase our production materially without fear of unduly exhausting our reserves. As to the second, this is largely dependent upon the growth of the world's consumption and the development of production in other countries.

Search for New Fields

"Outside of the main fields to which I have referred we have continued our drilling operations in several parts of Persia with a view to discovering new fields, but so far without much success, and several areas which had been favorably reported upon have had to be abandoned. On the Island of Kishm, however where we had been drilling for some years past and which we had also decided to abandon, we met some months ago with an unexpected flow of oil when the casing was being withdrawn from one of the wells. This oil, which has been continuing to flow ever since at the rate of between 400 and 1,400 gallons daily, is of a very unusual character, being practically nothing but pure petrol and kerosene. Though we do not attach much importance to this 'find,' we are proceeding with our examination of the territory in the hope of being able to discover the source from which this highly infiltrated product has been derived.

"The development of the new area referred to by men in the opening part of my remarks is being actively pursued, with a view to proving its maximum extent and productiveness before we can safely embark upon any large scheme of pipe line or refinery development. The further developments in this area are, I am pleased to say, of a satisfactory character, and the oil produced is of an excellent grade, and there is but little doubt that in this area we have proved another valuable field.

Refineries

"As regards our refineries at Abadan, the difficulties to which I referred last year have all been overcome, and the throughput since the close of the last financial year has been at the rate of over 2,800,000 tons per annum. One drawback from which we have been suffering, in the detention which it causes to our vessels, is the inadequacy of the number of our loading berths at Abadan to handle the constantly expanding volume of oil. We are now handling tankers there at the rate of about one and one-half vessels per day, and, in addition, we have to find accommodation for loading and unloading a large number of other vessels employed in carrying our packed oil, plant, stores, and other general cargo, and we are erecting four additional jetties

(Continued on Page 205)

—Courtesy of "The Lamp."

Their supremacy has been established under the flags of the oil producing nations of the world. Distributed uiversally for sale or rent by the Continental Supply Co., International Supply Co., Leidecker Tool Co., Drillers Supply Co., Farley Machine Co., and the Bridgeport Branches.

THE BRIDGEPORT MACHINE COMPANY

General Offices & Works WICHITA, KANSAS

Oil Activity Near Baku Shows Increase

Steel Mills Built, Railroads Constructed, New Equipment Installed in Refineries and Improved Methods Employed

By B. Bondarevsky
Editor, Azerbaidjanskoe Nephtyanoe Chosyaisivo
Translated from Russian by Dr. Morris B. Lhevine, Tulsa, Okla.

October 1, 1924, marked the end of the fourth year in the Russian oil industry after it had been nationalized, which has brought new successes for the oil industry in Baku. This will be better understood and to a degree proven by comparative statistical figures. All together for the year from October 1, 1923, to October 1, 1924, the region of Baku has produced 258,682,000 poods of crude (one barrel is equal to 8⅛ poods). Comparing the production of this year with the years previous we have the following:

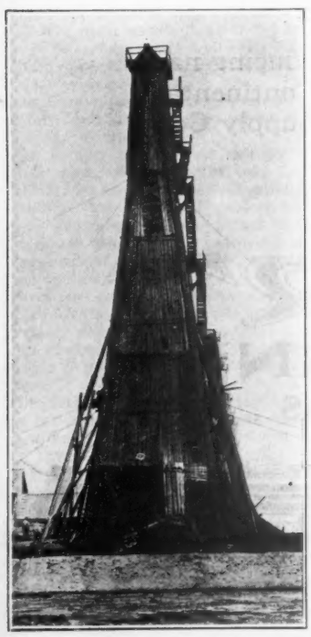
Year	Poods	Pct.
1920-21	150,018,000	100
1921-22	179,808,000	119.9
1922-23	212,763,000	141.8
1923-24	258,682,000	172.7

As is seen from those figures in comparison with the previous years, in the year 1923-24 there was produced almost 46,000,000 poods more crude than before.

On the different fields this production has been divided as follows:

	Poods
Balachani	36,195,000
Sabunchi	50,649,000
Ramani	50,872,000
Surachani	56,773,000
Bibi-Ebat	44,609,000
Binagadi	13,188,000
Skimming production	6,396,000
Total	258,682,000

Flowing well on land filled in along shores of Bibi Ebat Bay



Flowing well No. 24 on Bibi Ebat Bay

The flush production for the year 1923-24 was 17,027,000 poods. The second half of the year was characterized by a number of gushers that came in on the shores of Bibi-Ebat Bay and in the region of Surachani. A portion of the bay near the shore line is filled in and drilling operations carried on in this reclaimed land. The number of producing holes has been constantly growing.

In October, 1920, there were 1,024 holes; same month in 1921, 945 holes; same month in 1922, 1,289 holes; same month in 1923, 1,788 holes, and the same month in 1924, 1,979 holes.

For four years we have brought into exploitation more than 900 holes. In the process of drilling in the previous year we had more success than in the exploitation. During the 1923-1924 year we had drilled an area of 36,554 sashen (sashen equal to 3 yards).

The following data will give the growth of drilling operations of the past four years. The year 1920-21 drilled 1,608 sashen; 1921-22, 7,069 sashen; 1922-23, 23,661 sashen, and 1923-24, 36,554 sashen.

In the year ended there were a number of wildcat wells drilled in new regions, such as Kala, Puta, Chorocan, etc. A great deal has been done in improving the drilling as well as in the process of exploitation. Instead of the usual method of bringing up the oil, which consisted of pulling it up in barrels, we have introduced the method of pumping wells with deep pumps. This type of work will be developed yet to a greater degree in the coming year of 1924-1925. A great amount of oil has been produced with the help of electricity.

With the aid of electrical energy there was produced in 1920-21, 50.7 per cent of the crude; in 1921-22, 67.7 per cent; in 1922-23, 72.9 per cent, and in 1923-24, 74 per cent.

Through the refineries in that region there has been put through the stills for the year 1923-24 a quantity of 144,687,000 poods of crude and 5,137,000 poods of some other crude products.

The refined products obtained follow:

	Poods
Kerosene	38,664,000
Lubricating oils	7,212,000
Wax products	15,546,000
Benzine	1,135,000
Gasoline and ligroin	3,732,000
Residue of crude	81,758,000
Total	148,047,000

The refineries in that region during the year have undergone considerable repair work, due to which fact the output of those refineries at this time has been increased a very great degree.

The export of oil products from Baku is as follows: Through the railroads in different directions was exported 30,770,000 poods; through the pipe line Baku-Batum has been pumped through 24,057,000 poods; through the Caspian Sea route has been exported 132,478,000 poods: from this amount to Astrachan has been ported 120,170,000 poods; the general export amounted to 187,304,000 poods; the export of oil products to different foreign countries reached 32,094,000 poods.

The quantity of bezine exported was 905,000 poods; of kerosene, 21,182,000 poods; wax products, 2,864,000 poods; lubricating oil, 4,886,000 pools; residue of crude, 2,090,000 poods, and fuel oil, 167,000 poods.

This is in very short the amount of production and export, which was reached in the oil region of Baku. Besides this in the last year there has been completed a great amount of important projects. Among those we will mention a great amount of steel mills to serve the production and drilling industries; the building of railroads to serve the oil industry, about 75 miles having been constructed; the building of a tremendous central oil well supply house; the building of a new pipe line from the Bibi-Ebat region to the refineries of the Black City, and finally the construction of a great number of houses for the use of the people employed in the oil industry.

We hope that in this present year of 1924-1925 the production of crude oil will be developed to a figure of 300,000,000 poods and the area involved to 40,000 sashens.

WHITE EAGLE SALES

White Eagle Oil & Refining Co. sales through its own stations for the first 10 months of 1924 totaled 50,705,653 gallons of gasoline and refined oils compared with 44,692,555 gallons for the same period in 1923.

One of the big wells in the Baku region. Note the armed soldier at the right

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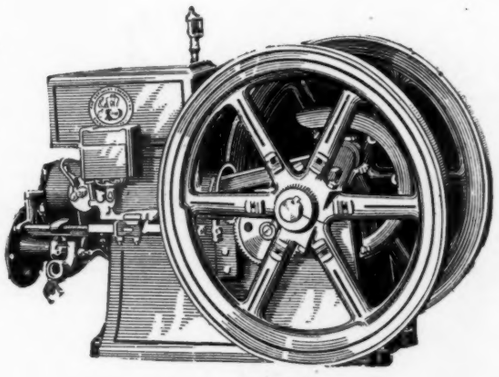

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Oil Development of South America

Expected to Repeat Experience of Mexico, Furnishing the World With Much Crude and Using Comparatively Little

By Charles E. Bowles

To the end of the year 1923 South America had produced less than 1 per cent of the oil of the world.

In the year 1923 she produced slightly over 1½ per cent of the oil that the world produced.

South America has an area of 7,000,000 square miles, or more than twice the size of the United States. It has a population of 67,000,000; a very large percentage of which cannot be considered as potential buyers of motor vehicles. Brazil was colonized by the Portuguese and that language is still the language of Brazil. Practically all of the remainder of South America, except Guiana, was colonized by and for centuries was under the rigid domination of Spain—and Spanish still remains the almost universal language of the larger part of South America. British, Dutch and French Guiana are ruled, each by the home government of the same name. Except these three small countries all of the other countries of South America are republics, with governments modeled closely after the United States.

In all of South America there are about 52,000 miles of railroad—about one-fifth as much as in the United States with much less than half the area.

Of the more than 18,000,000 motor vehicles in the world South America has less than 1 per cent.

Of most of the natural resources South America has an abundance but, as in other continents, they are irregularly distributed leaving some countries with plentiful reserves and others with little or none.

Little coal is mined in South America, partially because much of it is at present economically inaccessible. Little water power has been developed. Much silver has been mined—of the other metals, almost none. There are large deposits of nitrate—inconceivably vast forests of mahogany and other valuable woods—hundreds of millions of acres of the richest of soils with almost no intensive agriculture, as we know it—relatively little manufacturing—little of the intensive intercommunication between countries such as we have.

And regardless of the 67,000,000 population and the wealth of natural resources, South America, to a very great extent, is almost a virgin continent from an industrial standpoint.

Undeveloped Resources

And it is this background of undeveloped resources that must be kept constantly in mind when one attempts to understand how the oil fields of South America will be developed, how much of the refined products will find a present market in South America and how rapidly that market can be expected to grow.

Having less than 150,000 cars and trucks in all of South America, there is obviously not a large present market for gasoline. With relatively few factories and little machinery, aside from the railroads, the field for lubricating oils is not large—likewise other petroleum products, except kerosene, of which more is sold than of any other refined product.

A statistical comparison between the United States and the countries of South America, on the basis of industrial development built around the natural resources, would be absolutely unfair to South America unless one gave full consideration to the remarkable progress that has been made during the last few years in these South American countries.

European civilization touched both North and South America about 400 years ago North America's industrial growth started a hundred years ago, grew slowly at first, but in the last 30 years the growth has been almost beyond comprehension.

In South America industrial growth is just starting—and if oil, the automobile, the motor truck, the tractor and the airplane have anything like as great influence in accelerating development there, as they have had in the United States, then South America will make more industrial and material progress in the next 50 years than she has made in the last four centuries.

Table 1—Area, Population and Railroads of South America

Country—	Population	Area Sq. Miles	Railroad Miles
Argentina	8,699,000	1,136,000	22,000
Bolivia	2,890,000	614,000	1,400
Brazil	30,636,000	3,146,000	18,000
Chile	3,819,000	290,000	5,100
Colombia	6,300,000	435,000	926
Ecuador	2,000,000	119,000	413
Guiana	355,000	168,000	...
Paraguay	1,000,000	98,000	308
Peru	7,300,000	534,000	2,000
Uruguay	1,529,000	72,000	1,660
Venezuela	2,412,000	394,000	646
Totals	**66,940,000**	**7,006,000**	**52,453**

Oil has been known to exist in South America almost since the Europeans first visited the country 400 years ago. And for almost 400 years the oil resources of South America have lain undeveloped.

Peru's Oil Fields

Referring to Table 2, we find that Peru first began to develop her oil in 1896. All of the present oil fields are found in the neighborhood of Talare along the northwest seacoast just south of the border of Ecuador. The history and the progress in developing the oil fields of Peru, as well as of the other oil-producing countries of South America, have appeared from time to time in The Oil and Gas Journal and will therefore be omitted from this article. To the end of 1923 Peru had produced a total of over 44,000,000 barrels of oil.

The production to the end of 1919 totaled almost 27,000,000 barrels, leaving about 17,000,000 barrels produced during the last four years, within which period the yearly output has almost doubled.

There are two refineries in Peru—a very small one at Zorritas and the International's, of 5,000 barrels, at Talare.

The dominating factor in Peruvian oil is the International Petroleum Co., Ltd., a Canadian subsidiary of the Standard of New Jersey. The International controls two-thirds of the production in Peru and has a marketing arrangement covering practically all of the remaining third.

Surplus crude goes to the Imperial Oil Company's refinery at Vancouver, Canada, or via the Panama Canal to the Standard's refinery at Charleston, South Carolina.

Peru is over one-sixth the size of the United States and has about 2,000 miles of railroad. With a population of over 7,000,000 there are only 3,500 motor vehicles in the entire country. The oil industry in Peru, while not large, is essentially sound and stable, has never known exploitation, serves the people acceptably and extremely reasonably and is a powerful factor in the development of the country.

Argentina's Petroleum

Argentina produced her first oil in 1908 and to the end of 1919 had produced a total of 5,550,000 barrels. During the last four years she has produced almost 10,000,000 barrels, the production having doubled in that period.

Argentina has practically no coal—and when the Great War shut off her imports of fuel for her industries and her railroads she naturally turned to her oil fields which had been opened about six years previously.

With a population of nearly 9,000,000, and with her capital, Buenos Aires, the largest and most progressive city south of the equator, and with her industries developing rapidly, present indications are that her needs for fuel oil and refined products will be greater than her own fields can supply and that she will be a permanent buyer of oil from foreign countries—principally the United States.

Her present producing fields are directly on the Atlantic Coast 1,000 miles south of Buenos Aires. There is a skimming plant at the loading dock and tankers distribute the output to the cities along the coast. Argentina's oil field is almost at the extreme southern tip of South America and is as far south of the equator as the Salt Creek, Wyo., field is north of it.

The principal production comes from the Government reserve covering about 20 square miles. Supplies must come from the United States or Europe—often leading to months of delays.

Unless present conditions and all indications reverse themselves Argentina can be depended upon as a constantly expanding market for petroleum products from foreign countries. Ten years ago she was importing 4,000,000 tons of coal a year. Today she is producing, in fuel oil, the equivalent of slightly over 1,000,000 tons of coal, hence the assurance of the future market.

Trinidad's Production

The island of Trinidad, the greatest asphalt producing area in the world, produced its first oil in 1909. In the next 10 years the island produced a little over 9,000,000 barrels—and in the last four years a little more than in the previous 10, the total production to date being slightly less than 19,000,000 barrels.

The island has an area of less than 2,000 square miles and a population of about 400,000, only a small proportion of which can be considered as a potential market for petroleum products.

Venezuela Next Area

To the end of 1923 Venezuela had produced less than 9,000,000 barrels of oil of which over 8,000,000 barrels have been produced in the last four years. Coming into production in 1917, the growth has been consistent and rapid, with 4,000,000 barrels last year.

Lying around the rim of Lake Maracaibo, the four fields—Mene Grande, El Mene, La Rosa and La Paz—give evidence of being the next great oil area to be developed.

The La Rosa well came in December 9, 1922, ran wild for nine days, produced a million barrels of oil—and sanded up. The offset well came in at 6,000 barrels and a well a mile south came in May 4, 1923, at "several" thousand barrels. The discovery well in the La Paz Field, across the Lake from the La Rosa well, is rated at from 2,500 to 5,000 barrels.

The Venezuelan oil field is really a by-product of

Table 2—Production of Crude Oil in South America

Country—	First Prod.	Prod. to End of 1919	1920	1921	1922	1923	Total
Peru	1896	26,980,000	2,817,000	3,699,000	5,314,000	5,508,000	44,318,000
Argentina	1908	5,550,000	1,657,000	2,061,000	3,018,000	3,200,000	15,486,000
Trinidad	1909	9,274,000	2,083,000	2,354,000	2,445,000	2,660,000	18,816,000
Venezuela	1917	878,000	457,000	1,433,000	2,201,000	4,000,000	8,969,000
Colombia	1922	.....	.....	.....	323,000	400,000	723,000
Ecuador	1923	.....	.....	.....	.....	160,000	160,000
Totals		**42,682,000**	**7,014,000**	**9,547,000**	**13,301,000**	**15,928,000**	**88,472,000**

the World War. The Royal Dutch, through a subsidiary, Caribbean Petroleum Co., owns nearly all of the Mene Grande Field and apparently the cream of the promising territory. It has a new 8-inch pipe line from the Mene Grande Field to its 2,000-barrel refinery at San Lorenzo near by on the lake. It has also built a 20,000-barrel refinery on the island of Curacao just off the entrance to Lake Maracaibo—and recently added a cracking plant.

The Caribbean Petroleum Co. has been planning to increase its daily production from 10,000 bbls. to 25,000 bbls. and on this basis, this one company would produce crude at the rate of 9,000,000 bbls. a year.

The Standard of New Jersey, Gulf Oil Corp., The Texas Co. and several other powerful American companies, either directly or through subsidiaries, have acquired large concessions, spent millions of dollars and will spend millions more in developing this promising area.

A very shallow channel, 11 feet deep, connects Lake Maracaibo with the acean —and while this is a present minor handicap, before the time comes to "take the lid off" the Maracaibo Basin oil fields the transportation problem will have been solved.

Government in Control

All subsoil rights have always rested with the Venezuelan Government, hence there will be no difficulties over land titles, which have been the most fertile source of trouble in the development of Mexican oil fields.

Venezuela is larger than Texas, Oklahoma and Louisiana combined and has about 650 miles of railroad. It has a population of about 2,500,000 with less than 4,000 cars and trucks registered. The transportation situation, as reflected by the railroad mileage and the use of motor vehicles, is not fairly indicative of the progress made in industrial development—but while Venezuela may produce millions or tens of millions of barrels of oil, the home market for fuel oil and refined products will be small in comparison with what she will furnish to other countries.

Colombia's Resources

Colombia produced her first oil in 1922—323,000 bbls.—and 400,000 bbls. last year. Her oil fields lie in the interior, 400 miles from Cartagena on the Caribbean coast. A great barrier spur of the Andes range of mountains separate the Venezulean fields from the fields in Colombia.

On the west bank of the upper course of the Magdalena River, at a little camp called Barranca—Bermeja, the Tropical Oil Co., now a part of the International Petroleum Co. of Canada, opened a new field in the heart of the wildest and most magnificent tropical scenery. No story could have a more romantic setting than this prosaic search for oil to keep the world's automobiles going.

The field is being developed by the International Petroleum Co., Ltd., a Canadian subsidiary of the Standard of New Jersey, organized to operate in South America. The field is located on the famous De Mares' concession of 2,000,000 acres ,and it is estimated that the present production could easily be increased to 20.000 bbls. a day—if there were transportation facilities to handle it. A 400-mile pipe line, costing around $20,000,000 is shortly to be built through unbroken jungles from the oil field to Cartagena on the north coast—and the oil will go to Standard refineries, as needed.

A 2,000-bbl. refinery has been built on the river bank about 25 miles from the field and its output supplies almost all of Colombia's needs for refined products. Coal is scarce in Colombia—and prior to the opening of this field the railroads burned wood—today they burn fuel oil. Since the refinery was built the imports of refined products dropped from 1,000,000 gallons a year to almost nothing.

Colombia is about one-seventh as large as the United States—and has less than 1,000 miles of railroad. It has a population of over 6,000,000 with less than 2,500 motor vehicles.

Ecuador Enters

Ecuador, lying on the Pacific Ocean, between Colombia and Peru, produced 160,000 bbls. of oil last year, its first year as an oil-producing country. The fields lie along the shore, across the Bay of Guayaquil from the oil fields of Peru. The oil seepages of the Santa Elena district have been known for 400 years—but the first real oil production came in 1923.

There is a small refinery at Cantivo—100 bbls. capacity—and another at Ancon. A pipe line and railroad are being built from the field to the Ancon refinery. Ecuador has imported refined products for years and it is not probable that the situation will be reversed in the near future.

Ecuador is almost three times the size of Ohio—and has slightly more than 400 miles of railroad. It has a population of about 2,000,000 and less than 700 motor vehicles.

Bolivia's Hopes

Bolivia is not yet listed as an oil-producing country—and yet northwest of Santa Cruz lies what is thought to be one of South America's large oil fields.

The Standard of New Jersey is represented by a subsidiary, the Standard Oil of Bolivia, which is carrying on the exploration and development work. Should a large field be located, the real problem will be to transport the oil to tide water. It would be almost a physical impossibility to build a pipe line westward, over the Andes, to the Pacific Coast. Oil might be transported by river boats down the Madeira and Amazon River to the Atlantic Ocean—a distance of 2,000 miles—and from there to Gulf Coast or Atlantic seaboard refineries. Or it might go south by way of the Parana River and its tributaries to Buneos Aires —a matter of 2,000 miles.

Up to the present time no transportation problem has been great enough to prevent or even seriously retard the development of a real oil field—and if Bolivia has the oil, pipe lines and tank steamers will carry it to tide water.

Brazil's Potentialities

Brazil is slightly larger than the United States—and while no promising areas have as yet been located, a great deal of geological work has been done—and with widely scattered oil seepages it is possible that in the near future Brazil will be added to the list of oil-producing countries.

Summing up the present situation in South America we find a country that is producing less than one-fortieth as much oil as the United States. There are only a few refineries on the entire continent which is more than twice the size of the United States. The present market for refined products and fuel oil will grow rapidly, but, in comparison with what we are accustomed to in the United States, will be relatively small.

To the United States, the outstanding value of the South American fields will be a source of supply of cheap crude—and a market that will buy back a part of it in the shape of finished products.

With some variations, the story of Mexican oil will be repeated along the Caribbean coast of South America.

Mexico has furnished the world with much crude oil—and used comparatively little herself.

Venezuela and Colombia will very probably furnish the world with much crude oil—and will use comparatively little themselves.

Oil will undoubtedly exert a powerful influence in accelerating the industrial development of the South American countries in which it is found—but from an industrial standpoint the United States and Europe, through less than a dozen great oil corporations, will get far more out of the oil that South America produces than South America will get.

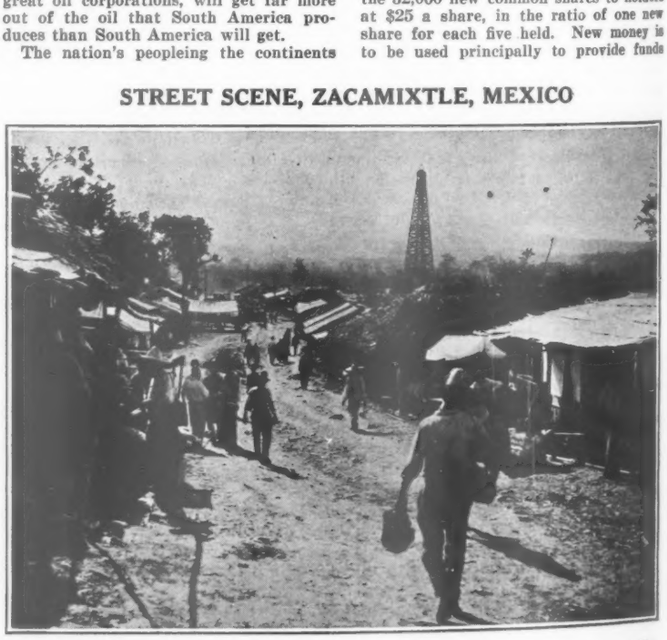
The nation's peopleing the continents of the world are not developing industrially at the same rate—they are not utilizing the natural resources of their countries at the same rate—and it seems almost like a "penalty" placed on the less developed nations, that others shall come in, develop their natural resources, transport the great bulk of their minerals, oils, etc., to the industrially highly developed nations, and return only such part of the manufactured products as the richly endowed but largely undeveloped nations can absorb.

In this sense of the word, South American oil will render a great service in hastening the motorization of the world —and even if in so doing she gives up to other countries more of her oil resources than she retains for her own use, her advancement will be far greater than if she held her oil, undeveloped, in the ground.

TAMPICO, MEXICO, SHOWING MAIN STREET

(c) Burton Holmes from Ewing Galloway, N. Y.

STREET SCENE, ZACAMIXTLE, MEXICO



(c) Burton Holmes from Ewing Galloway, N. Y.

TELLS OF DIAMOND DRILL

Frank A. Edson, petroleum engineer of Norman, Okla., gave an interesting talk on "The Use of the Diamond Drill in the Oil Industry," before the class in "Oil and Gas Production," of the University of Oklahoma. Mr. Edson has drilled a number of tests with the diamond drill in Mexico and the Mid-Continent. At the present time he is drilling a deep test for oil with a diamond drill east of Wynnewood, Okla. The talk given by Mr. Edson is the first of a series of 24 to be given by the students in Petroleum Engineering at the University of Oklahoma.

TEXTBOOK ON THERMOMETERS

"A Textbook on Thermometers" is the title suggested for the new catalog No. 200 now being distributed by the American Schaeffer & Budenberg Corp. of Brooklyn, N. Y., and Boston, Mass. Thermometers for all conceivable uses are pictured and described in detail in this 50-page brochure, and in addition, the details of construction and design of Crescent instruments are shown by means of diagrams and cut-away drawings and photographs. The catalog is already punched for insertion in loose-leaf forms.

BEACON OIL STOCK INCREASE

The Beacon Oil Co., operating a refinery at Everett, Mass., and in which Massachusetts Gas Co. owns 44½ per cent of common stock, proposes increasing its common stock from 160,000 to 192,000 no par shares. It plans to offer the 32,000 new common shares to holders at $25 a share, in the ratio of one new share for each five held. New money is to be used principally to provide funds for continuance of efforts to develop production in Venezuela. As of October 31, last, the company had invested $1,934,000 in Beacon Sun Co., Sun Oil Co. having put in a similar amount to acquire properties and for surveying, geological and drilling work. No production has been developed yet, but test well have not been completed. Much of the work has been core drilling to establish subsurface conditions.

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Oil is Big Asset of Dutch East Indies

Up-to-Date Drilling and Refining Equipment Are Used in Netherlands' Possession. Believed to Have Large Resources

By Dr. Neil Van Aken
Netherlands Chamber of Commerce in New York

Nature has ben extraordinarily lavish with its gifts to the Netherlands East Indies. Petroleum constitutes one of their most valuable assets, not only in the amount of capital invested or wealth derived from it, but as a complement to a well rounded out economic unit and a contribution to the every day neds of a growing and progressive population.

In the sum of petroleum produced, the Netherlands East Indies are of comparatively small importance, with only 2.5 per cent of the annual world production to their credit. Prospecting for oil has not been undertaken on a large scale, because conditions under which surveys are made are not of the best. Not only is the country outside of the more populous districts of Java covered with dense jungle, but the inaccessibility of the outlying districts, combined with the total absence of surface indications and the decomposition to a great depth of the covering strata, make it very difficult to get reliable evidence as to whether the conditions are suitable for the accumulation of petroleum. In most cases it is necessary to sink a large number of trial wells of considerable depth to allow of reliable measurements of the underlying strata being made. Climatic and other local conditions put the geologists and their staffs to a severe test and make the work very trying. In spite of these handicaps, it is generally known that, in addition to the centers now producing petroleum, large reservoirs of this desirable fluid exist in various parts of the islands and it is confidently expected in due time these hidden resources will add considerably to the wealth of the Netherlands East Indies. Djambi, lying north of Palembang in Sumatra, is one of these promising districts. Preliminary operations to determine the value of this territory as a producing center are now under way. This district is to be developed by a company formed two years ago, "The Netherlands Indian Mineral Oil Co." in which the Netherlands East Indian Government and the Batavia Oil Co. (Royal Dutch) are financially interested on a 50-50 basis, while the supervision and the control of the company is held by the Government.

The fields which are today producing in greater or smaller quantities are scattered over almost the entire East Indian Archipelago. The most important of them are:

1. The districts on the northeast coast of Sumatra, called Langket and Perlak.
2. The residency of Palembang in South Sumatra.
3. The residencies of Rembang and Soerabaya on the Island of Java.
4. The whole district of Koetei and the Island of Tarakan in Borneo.

Sumatra Production

The actual operations in the districts of the Sultanate of Langkat commenced with the sale in 1890 of the concession held by Dr. de Ruiter Zylker to the "Royal Dutch" (Royal Dutch Co. for the Working of Oil Wells in the Netherlands Indies). The first step of the Royal Dutch in its efforts to increase production was the building of a refinery at Pangkalan Brandan on the Babalan River, the construction of a 6-mile pipe line to the oil field and the boring of new wells; in 1892, the first refinery commenced operations. The territory proved so productive that in 1893 about 400,000 cases of lamp oil (kerosene) were shipped; this increased to 5,500,000 cases in 1898. The year following saw a decrease to about 1,840,000 cases; minimum production of 130,000 cases was reached in November, 1899.

A series of unsuccessful borings and a general decrease of production threatened the existence of the Royal Dutch, but the new manager, August J. B. Kessler, saved the situation by turing to the transport of petroleum for Russian producers to East-Asiatic ports. Realizing the risk involved in being dependent on one production center, he made efforts to acquire other concessions and, as a third means of securing the future of the company, inaugurated a system of scientific research by expert geologists before attempting further boring operations. One of Mr. Kessler's first steps in the general direction of extending the operations of the Royal Dutch was the conclusion of an agreement with the Petroleum Co. Holland-Perlak, later called the Perlak Co., which resulted in the boring of the first production well in 1899 and in connecting the oil field with the refinery through the building of a pipe line with a length of about 100 miles. The total production of the northeastern part of Sumatra is given in:

	Metric tons		Metric tons
1911	343,941	1917	360,839
1912	378,028	1918	194,215
1913	303,539	1919	167,466
1914	253,969	1920	194,412
1915	224,342	1921	346,260
1916	208,156		

Palembang Operations

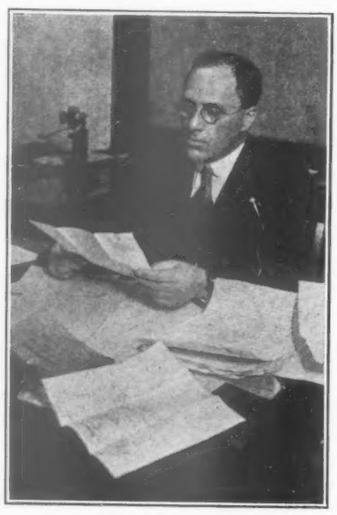
Another important production center in Sumatra is the residency of Palembang in the southern part of the island. The first operations in this district were undertaken by the Moeara Enim Co. and the Sumatra-Palembang Co., organized almost simultaneously in 1897. The Moeara Enim soon controlled the best producing fields of Palembang and connected them through a 100-mile pipe line with its refinery at Pladjoe (on the right bank of the River Moesi). The first shipment of kerosene took place in 1899. In 1904, all concession and equipment were sold to the Royal Dutch. The Sumatra-Palembang Co. (the Sumpal) obtained the concession "Palembang" more towards the northeast of the residency, near the Lalang River; a refinery was built along the Lalang near Bajoeng, Lentjir. This company also became the property of the Royal Dutch in 1902. The statistics below indicate the productivity of the Palembang oil fields. They include the production figures of the Netherlands Colonial Co., a subsidiary of the Standard Oil. (In 1919 this company produced only 615 tons.)

	Metric tons		Metric tons
1911	339,331	1917	306,604
1912	282,001	1918	325,358
1913	258,649	1919	253,061
1914	221,455	1920	238,127
1915	267,268	1921	349,384
1916	317,985		

The total production of the entire island of Sumatra in 1921 was 564,717 metric tons, as published in the 1921 report of the Royal Dutch. This, however, was the production of the Royal Dutch only.

Fields in Java

The first company organized to exploit the oil fields of Java, the Dordtsche Petroleum Maatschappij, was established in 1887. Its first shipment of 8,000 cases of kerosene from the concession Djabakota was sold in 1889. The company gradually acquired the control of the most important oil fields of Java, to which territory it confined all its operations. During the first years after its establishment, the "Dordtsche" explored the residency Soerabaya only, where it built a refinery at Wonokromo. In 1893 it closed a royalty contract with the holders of a concession in the residency of Rembang. This field proved so successful a second refinery was built at Ngareng on the Solo River, equipped also for the making of paraffin which constitutes a considerable part of the Rembang oil. Later a contract was entered into with the Company Gaboes, in the southern part of the residency Samarang. A third refinery of smaller capacity was built in 1898 in the City of Samarang. On the Island Madura, which forms an administrative unit with Java, efforts were made to establish a paying petroleum industry and one of the first wells, at Boedjoer Tengah, at one time produced as many as 38,000 gallons a day. Production gradually dwindled to a minimum and in 1906 operations in Madura ceased entirely, but were resumed in 1916 on a small scale. Present production is small. In 1911, the "Dordtsche" became the property of the Batavia Oil Co., incorporated at The Hague, Holland, in 1907 as a result of the amalgamation of the interests of two petroleum companies, the Royal Dutch and the Shell Transport and Trading Co.



Dr. Neil Van Aken

The Government statistics give the following petroleum production for Java, including that of the Netherlands Colonial Co. (Standard Oil) with a total of only 4,669 tons for 1919:

	Metric tons		Metric tons
1911	172,056	1917	254,460
1912	185,931	1918	241,160
1913	197,027	1919	248,646
1914	226,591	1920	353,475
1915	211,855	*1921	344,655
1916	243,389		

*Production of the Royal Dutch only.

Duth Borneo

The fourth and most productive petroleum territory of the Netherlands East Indies is the Island of Dutch Borneo in which we include the adjoining small Island of Tarakan.

Already in 1863 the Dutch mining engineer, J. H. Menten, explored the Island of Tarakan and later the region of Koetei. In the latter district he obtained in 1888 the Louise concession at the mouth of the Mahakkam River and in 1891 the Mathilde concession at Balik-Papan. In 1897 he commenced drilling in the Sanga-Sanga Field, where oil was struck at 190 feet. The Menten concessions became the property in 1898 of the Netherlands-Indian Industry & Trade Co., founded that year under the control of the Shell Transport & Trading Co. The amalgamation of the Royal Dutch and the Shell in 1907 resulted in the absorption by the new Royal Dutch-Shell group of the Netherlands Indian Industry & Trade Co.

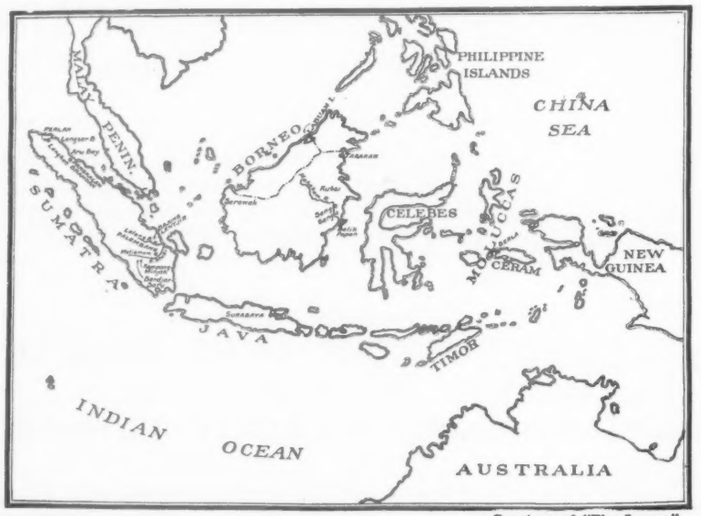
Drilling on a commercial scale began at Sanga Sanga, Borneo, in 1899, resulting gradually in a production of 700 metric tons a day. A refinery with a capacity of 2,000 metric tons a day was built at Balik-Papan. The productivity of the Borneo and Tarakan Fields is best seen from the statistics which in 1910 give that territory 42 per cent of the total production of the Netherlands East Indies, while in 1920 its percentage had risen to 61.5 per cent. The following figures of production in Dutch Borneo are given by the Government statistics for the years:

	Metric tons		Metric tons
1911	814,707	1917	869,861
1912	672,437	1918	999,846
1913	766,687	1919	1,372,140
1914	867,405	1920	1,455,227
1915	894,997	*1921	1,437,186
1916	957,025		

*Production of the Royal Duth only.

In addition to the operations of the Royal Dutch in Borneo, the Netherlands Colonial Co., a Standard Oil subsidiary, produced, mostly from its Sadjau concession, 188 metric tons in 1914, 217 tons in 1915, 371 tons in 1916, 139 tons in 1917, 252 tons in 1918 and 164 tons in 1919.

(Continued on Page 150D)



—Courtesy of "The Lamp."

It Was a Terrific Fire—But Wilson-Welded Tanks *Held!*

The fire started in a city storage yard and spread to the gas and oil station of the oil company. There were one 18000-gallon tank, two 12000-gallon tanks, and one 500-gallon truck tank—all Wilson-Welded. From the relief valve of the largest tank shot a jet of flame 40 feet long, but when the fire was over more than 3000 gallons of gasoline remained in the tank—and "the tank was not much hurt". The intensity of the heat is indicated by the blisters and bulges revealed in the photograph reproduced above. And to all this "grief" was added the strain of falling to the ground when the steel supports gave way. Yet, only one seam broke—and that on the truck tank. May we tell you more about Wilson-Welding? No obligation incurred.

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WILSON

WELDING MACHINES AND WELDING WIRE

1899.

—Courtesy of "The Lamp."

(Continued on Page 150D)

Peru Now Eighth Producing Country

Output This Year to be 6,500,000 Barrels With Estimate for 1925 of 7,750,000 Barrels. International Co. Produces 90 per cent

Although lacking in any spectacular development Peru is steadily climbing the production ladder, and whereas, in 1912, her quota was 1,752,000 bbls., she had in 1922 risen to eighth place among the producing nations with a total of 5,314,000 bbls.

As over 80 per cent of this production was contributed by the International Petroleum Co., Ltd., a subsidiary of Imperial Oil, Ltd. of Canada, the petroleum history of Peru is, at least in its later phases, largely a resume of that company's operations, particularly on the La Brea y Parinas estate on which its activities are centered.

Petroleum was known to the Incas. During the regime of Spain petroleum was worked as a royal monopoly, the source of supply being shallow, hand-dug pits in the vicinity of Le Brea. These pits were sunk until the oil bearing rock was uncovered, the oil usually being accompanied by salt water. After separating, the oil was taken to a series of ovens where it was heated in large iron or earthenware pots until the lighter constituents were driven off. The thickened pitch or "brea" was utilized for caulking vessels, rendering earthenware vessels nonporous and other primitive uses.

At La Brea, there is a handdug well, 4 feet square and 30 feet deep, with ladders and staging, similar to the early wells of the Rumanian fields. At some date 8-inch casing has been inserted, and lengths of riveted 10-inch pipe, stem and jars inscribed "Titusville, 1876," and the remains of the stills of a small refinery have been discovered, while the well continues to produce daily about 1 bbl. of lubricating oil. The difficulties in transporting this equipment from Talara to La Brea must have been tremendous, as only manual labor was available.

First Real Drilling

Apart from some sporadic drilling along the coast between 1867-1874, no real attempt at exploitation was made until the acquiral of the hacienda La Mina Brea nd Parinas by Dr. H. W. C. Tweddle from the Helguero family in 1888. This led to the formation of the London & Pacific Petroleum Co., Ltd., which along with the Lagunitos Oil Co. and the West Coast Oil Fuel Co., eventually took its place under the banner of the International Petroleum Co., Ltd., incorporated in Canada in 1914.

The La Brea y Parinas estate extends along some 25 miles of the coast line, Parinas Point, in the center being the most westerly point on the southern continent. The estate covers approximately 400,000 acres and its proximity to the sea is, perhaps, its one redeeming feature.

The early endeavors were beset by every conceivable hardship, testing every quality of the pioneer and every resource of the practical oil man. Necessities of industry and even of life had to be created. Overshadowing all was the sun-baked, interminable desert with its lack of water, and its ever-shifting sands which drift over railways, cover roadways, clog machinery, and wear out instruments, tires, boots and tempers. Up to 1905 water was obtained from wells in the Parinas Valley, where brackish water was pumped by windmills, and carried by mules. In 1905 an evaporating plant was built at Negritos, but tremendous difficulties were encountered. A new development along the most modern lines, insures a steady supply from the waters of the River Chira, 24 miles distant. Where in days past there were but a few scattered dwellings of a primitive nature, we now have the flourishing towns of Talara and Negritos, each with a population of around 3,000.

At the former, there is operated by the International Petroleum Co., a refinery capable of running 15,000 bbls. of crude per day, an extensive system of pipe lines bringing the oil from the producing centers. Mighty storage tanks with a capacity of nearly one million barrels are also to be seen. The steel tentacles of narrow gauge railways now form a network throughout the producing fields; motor cars rattle over newly built roads or penetrate where roads are not yet; tractors haul their stupendous loads over desert sand or stony plateau

The development of the field has been along conservative lines of steady progress. The first well was drilled in 1899 and, in the following year, the production was 203,860 barrels.

The million mark was passed in 1912 and latterly increased drilling activity has not been without results, as the following production figures show:

	Bbls.		Bbls.
1920	1,993,349	1922	4,386,938
1921	2,825,679	1923	4,637,112

By the end of 1923, a total of 1,773 wells had been drilled, 1,086 in production. In that year, 112 producers were brought in and 29 drilling wells were abandoned, either on account of drilling trouble or as dry holes, the total footage drilled being 193,531 feet.

Present Production

The present year has seen little diminution in activity as, up to the end of September, 68 producing wells have been completed, with an average initial production of 275 barrels and an average depth of 1,780 feet.

Owing to the depressed conditions a large percentage of the production has been shut in during the greater part of the year, but the figure for 1924 will be approximately 6,500,000 barrels. The field is capable of producing 30,000 barrels per day when conditions warrant and the opportunity has been taken to drill a large number of wildcat wells during the temporary shutdown which has resulted in the productive area being considerably enlarged.

A complete and up-to-date gasoline extraction plant has been in operation for a year or two and is handling over 200 million cubic feet of gas per month, from which the yield is in the neighborhood of 300,000 gallons. The residual gas is utilized in the field operations.

A conservative estimate of Peru's production for next year would be 7,750,000 barrels, of which the International Petroleum Co. will contribute around 90 per cent. The Lobitos Co. will produce approximately 1,000,000 barrels during the year.

Peruvian crude is, in general, of high quality, varying, according to district, between asphaltic and mixed base. The gravity is around 36 degrees Beaume and the low cold test crudes are in great demand for their lubrication properties.

The adoption of a new petroleum law (No. 4452) has given a distinct fillip to the petroleum industry in Peru and, within two years, has led to the denouncement of large tracts for oil exploration purposes, the companies which have been active having extended their holdings and many new companies having been formed.

Up to the present, areas totaling approximately 6,000,000 acres have been denounced, the principal activity being manifested by the Royal Dutch-Shell Co., the Standard Oil Co. of New Jersey, the International Petroleum Co., Lobitis Oilfields and Petro C. Hoyle.

The Government has also created certain Crown Reserves and proposals have been made by the Shell interests to develop these.

Provisions of New Law

The main provisions of the law follow: A "pertenencia" is 9.88 acres, a "Peruvian pound" (Lp.) has a par value of $4.86, a "sole" is one-tenth of a pound and is divided into 100 "centavos".

With the exception of certain government officials, denouncements for exploration or exploitation may be made by any person, although foreigners may not denounce within fifty kilometers of any frontier.

Exploration claims must be rectangular, with sides having a ratio not greater than ten to one, with the shorter side to any navigable waters fronted on. In inaccessible regions, natural boundaries may be admitted by special permission.

The country is divided into coastal, sierra and montana zones in which concessions are limited to 15,000, 20,000 and 30,000 pertenencias respectively. These claims require a guarantee deposit, which may be made in cash or internal debt bonds at the rate of Lp. 100 in the coastal zone. Lp. 80 in the sierra and Lp. per 1,000 pertenencias in the montana zone, and are granted from two to four years, extendible a further two years. During this period, an exploration tax is paid semi-annually at the yearly rate of 1 sole, 40 centavos and 20 centavos per pertenencia according to zone.

The cencession may be cancelled—(a) if transferred without Government permission, (b) if exploration tax is unpaid for three successive half-years, (c) if a working plan is not submitted for Government approval, (d) if a map of the exploration is not presented to the Government, (e) if the government is not ceded its share of any other products discovered in the exploration, (f) if work is completely suspended for one year on the coast and two years elsewhere, (g) if the concession expires, or (h) if, through failure to obtain favorable results, cancellation is requested. In the two latter cases, the guarantee deposit is returnable.

Exploitation claims must be rectangles of 1000 pertenencias or less and are subject to the same general conditions as exploration claims. They are granted for an indefinite period and if in the coastal zone, pay semiannually an area tax at the yearly rate of Lp. 1 per pertenencia.

When production has commenced, hey pay instead on a scale sliding from nine soles for an average of one ton per pertenencia to half a sole for an average of ten tons per pertenencia, the intermediate units of the scale decreasing one sole as production increases one ton. For claims in the sierra and montana, this tax is cut 50 per cent.

These claims also pay a royalty of 10 per cent of the production if within 150 kilometers of the sea, and six per cent otherwise. This royalty may be exacted in cash, with the price based on the Lima market, or in kind at the nearest port or railroad sation. In the third year, the concession pays on a minimum production, as set forth in the title deed. For transfer, in addition to the regular tax, five per cent is paid.

Among other conditions, the concessionaire must employ a certain percentage of native labor, must submit to Government inspection of his accounting and must offer 25 per cent of his company shares for Peruvian subscription. He may export only the surplus over the needs of the home market and will pay export tax, which tax will not be increased within 20 years. He can expropriate private property and can have free use of Government and municipal property.

The concession may be cancelled—(a) if the minimum production is not obtained during five consecutive years after the third year of the grant, (b) if the area tax remains unpaid for one year, (c) if the home market is not supplied, (d) if the claim is transferred without approval, or (c) if contracts for exploitation are made with foreign governments or their associates.

It should also be noted that pipeline companies must be common carriers, and refineries, if not operating to capacity, must refine the oil of other producers.

It would appear that a period of intense activity in exploration and wildcat drilling will result from the large denouncements already made, as possession of many of the claims is now being given. Whether this will bring into being any new fields of importance will only be demonstrated by events, but it can be said with certainty that petroleum seems destined to play no mean part in raising this virile young republic to an honored place.

—Photo courtesy "The Ideal" published by Union Tool Co.
Japanese religious ceremony at time of spudding in of well

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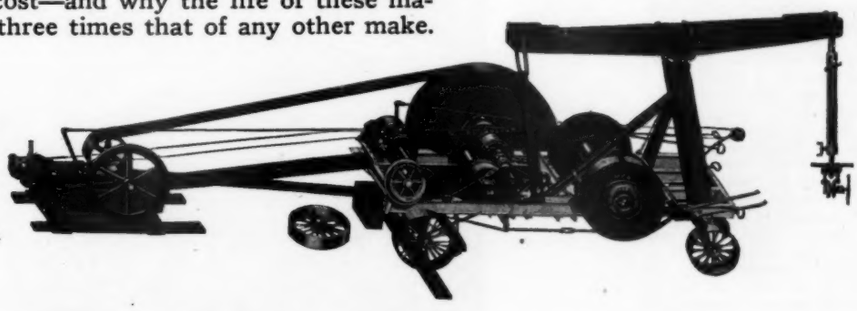
This attainment in drilling to a depth almost twice its rated capacity indicates the exceptional strength and dependability of this machine—our foresight in making every part of the machine at least twice as strong as necessary to properly function at its rated capacity—why LEIDECKER Drilling Machines have for over 30 years made records in drilling wells in exceptional time at a low cost—and why the life of these machines is usually two or three times that of any other make.



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Argentina's New Drilling Campaign

Present Production Around 750,000 Tons a Year but Expected to Reach Million Tons Annually Before Long

By Campbell M. Hunter*

From the extreme South to the extreme North of the Argentine Republic, innumerable indications of oil, asphalt, rafaelite, etc., occur. Thus heavy oil is found seeping out near Punta Arenas, on the Straits of Magellan, in the beds assigned to the Tertiary period, but so far no systematic prospecting operations have been carried out. The most southerly wells are drilled in the neighborhood of Santa Cruz, but the results so far recorded are of a discouraging order. From Comodoro Rivadavia the oil belt extends northward through the territory of Neuquin and the provinces of Mendoza, Salta and Jujuy, to the Bolivian frontier, a distance of about 1,500 miles, the width being at present unknown.

Broadly, the oil-bearing formations now exploited in the Argentine belong to the Cretaceous at Comodoro Rivadavia, the Upper Jurassic in the Province of Neuquen, the Triassic (Rhaetic) at Mendoza and range from Upper Mesozoic to the Devonian in Jujuy and Salta.

Comodoro Rivadavia

Comodoro Rivadavia was discovered by a happy chance December 13, 1907, when oil was struck at 535 meters. Immediately the Government suspended the mining laws within a radius of 25 kilometers and the Mining Department undertook the further prospecting. Five wells were drilled during the next three years, all of which yielded petroleum or gas.

In 1910, the Government reserve was reduced to 12,500 acres and the surrounding country was thrown open to public and private enterprises. Numerous concessions were applied for, but several were allowed to expire. It was soon, however, apparent that much undesirable speculation in oil lands was taking place, to stop which the Government prohibited, by a decree in 1913, the denouncement of mines in a section of the district of Comodoro Rivadavia. This decree applied only to fiscal lands within that area, and permitted the acquisition by prospective oil companies of a few small private tracts.

More recently the Government has reframed many of the laws with reference to petroleum, but the new laws are still sub judice.

Owing to the existence of at least two unconformities between the surface beds and the oilbearing formations, a study of surface exposures affords little or no guide to the structure of the oil series. Actually the formations, as exposed, have a very slight dip to the southeast and are almost entirely free from faulting. The Cretaceous beds, in which the oil series occur, have doubtless been affected to a certain extent by the great earth movements which caused the uplift of the Andean range, but the most satisfactory explanation of the numerous elongated structures which have been traced within the proven limits of the field is to be found in erosional conditions that would be present at the mouth of a great delta, followed by a phase of more or less submersion or depression, during which the invading sea, here represented by the fossil deposits of the zone of Lahilla Luisa, covered the deltiac channels and sandbanks.

Present Operations

The present area over which oil prospecting operations have been conducted extends from Mangrullo, some 24 miles to the southwest of Comodoro Rivadavia to Puerto Visser, some 36 miles to the northeast, or in all over a roughly north and south distance of 60 miles. The wells at Mangrullo have not yet been drilled in, so the definite presence of oil in that area remains to be proven. The results at Puerto Visser were negative, though oil indications were encountered. Actually the present area is represented by Well No. 99 of the Government in the south and Kinkelin Well No. 1, not far from Pico Salamanca in the north, representing a north and south distance of 19 miles with an at present maximum east and west extension of approximately 6 miles, or in all say, 60 square miles.

Various drilling systems are in use. The Government until recently relied almost exclusively on the Fauck Express System. A few Canadian rigs, some with pole, others with wire cable tools, have been used, and good results have been obtained by combining Canadian rigs with the use of hollow water flush rods. The Astra Co., an Argentine concern, relies on the Raky system. Although rotary had been tried and rejected as utterly unsuitable, the author was convinced that the formations, at all events down to a depth of about 450-500 meters, were ideal for rotary drilling, and determined to give that system another trial under more workmanlike conditions. The results obtained were, from the outset, very striking. Thus, while the average time taken to drill wells with other systems exceeded 12 months, the average time occupied by the rotary alone or the rotary combined with hollow rods, amounted to only 60 days. Trial was made with cable tools for drilling in, but owing to the heavy nature of the oil and plastic condition of the clays and shales, the tools would not fall freely and the trial was a failure. The combination of hollow rods, worked off a local American type walking beam, was found to give excellent results, especially by using a reverse flush a continuous succession of good samples can be obtained. The importance of this feature canont be overemphasized, as the formations in most parts are so thin and lenticular, that unless great care is exercised, serious damage may result by inadvertently drilling through an oil sand into underlying water-bearing strata.

Until recently the methods adopted for exploiting the wells were confined to swabbing or bailing. The author was among the first to introduce the multiple pumping system, which has enabled the cost of production to be greatly reduced. Interesting experiments are now being conducted with gas jets, but results so far are inconclusive.

According to latest advices, present combined production of the whole field is at the rate of about 750,000 tons a year, and, as it is the intention of the Argentine Government to greatly intensify its drilling program, there is reason to anticipate that it will not be long before the field is producing a round million tons per annum.

The oil produced at Comodoro Rivadavia is essentially of the fuel oil type. The bulk of the production is shipped in its crude state to Buenos Aires and Bahia Blanca, where it is used as fuel, though a small quantity, amounting in 1923 to 43,062 tons, was passed through the Government refinery at Comodoro Rivadavia.

Recently the Direccion General de Yacimientos Petroliferos Fiscales was granted a credit for erecting a large refinery at La Plata, with an estimated daily throughput capacity of 2,000 tons, and for the further intensive development of the various national oilfields.

One of the difficulties is the presence of salt water. Owing to the very lenticular nature of the oil series and the close proximity of highly saturated water sands, it is often found that, apart from the main water shutoff cementation at about 450 meters, further cementations are required to exclude secondary water sands, which occur both above and below the oil sand lenticles. Much trouble has been caused through allowing wells to flow at a rate in excess of that consistent with the maintenance of a fair equilibrium between the static and dynamic conditions present in the oil sand. The result has been the premature flooding of wells and the consequent admission of water into oil sands exploited by adjacent wells.

The next most important oil bearing area in Argentina is undoubtedly of the Province of Neuquen. The geological conditions are entirely different from Comodoro Rivadavia. Within this zone, which extends roughly from at least Bariloche in the south to Cerro Alquitran, Los Buitres and to the Mines of Eloisa and Roca in the north, the oil-bearing series forms part of the Upper Jurassic system.

Apart from early desultory prospecting operations which took place about 1907-1908 at Covunco and Cerro Lotena, the first commercial oil well to be drilled in this area was completed by the Argentine Government at Plaza Huincul on September 30, 1918. This well flowed initially at the rate of several tons a day, the oil being remarkably high grade.

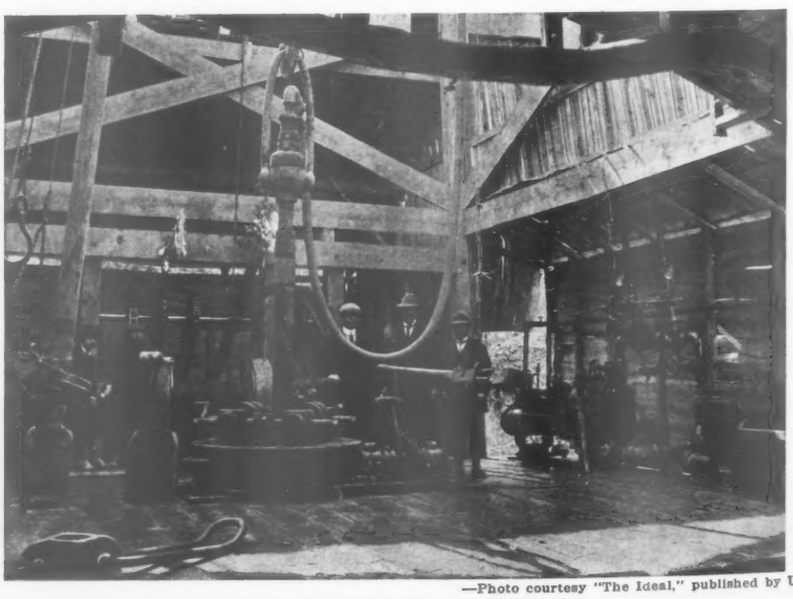
Immediately on striking oil the Government decided to drill further wells, the result, on the whole, very satisfactory. Owing to the inland situation of Plaza Huincul, and that the oil was so high grade as to render it unsuitable for immediate consumption as fuel, the Government preferred to concentrate its operations on the coastal field of Comodoro Rivadavia, where higher initial productions were being obtained.

Since the completion of the discovery well at Plaza Huincul, some 17 wells have been drilled on the Government reserve. The production returns afford no reliable indication of the capacity of the field, since the wells were not exploited once they ceased flowing, and it is only recently that systematic pumping has been instituted.

Several private enterprises acquired concessions eastward of the Government reserve, but the outcome has so far been unsatisfactory. More recently, drilling operations were initiated by Argentine Oilfields, Ltd., on the southern flanks of Cerro Lotena, where high grade oil has been encountered in several wells, and the prospects of opening up commercial production appear assured. The most interesting well recently drilled in Plaza Huincul lies westward of the Government reserve, and was sunk by the Cia. Petroleo de Challaco. Oil was struck at 712 meters.

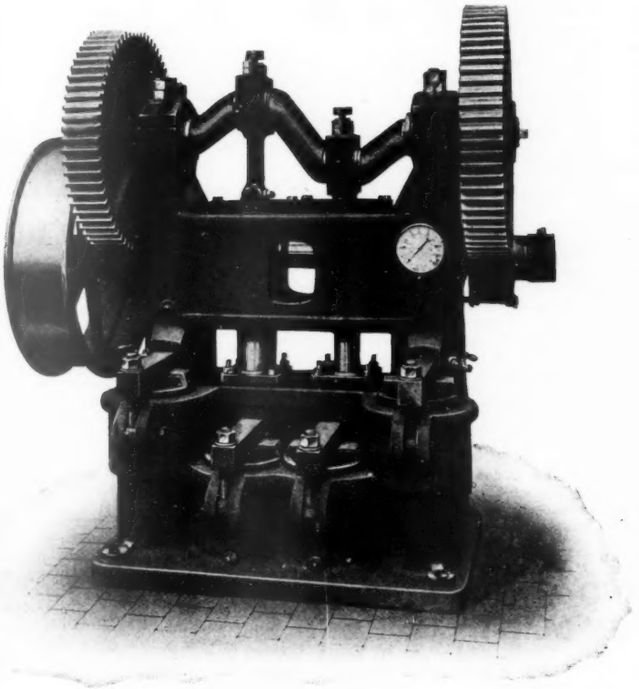
*Abstract of paper read at meeting of Royal Society of Arts, London, by Campbell M. Hunter, O. B. E., M. A., A. M. Inst., C. E., F. G. S., F. R. G. S.

JAPANESE WELL WITH AMERICAN EQUIPMENT



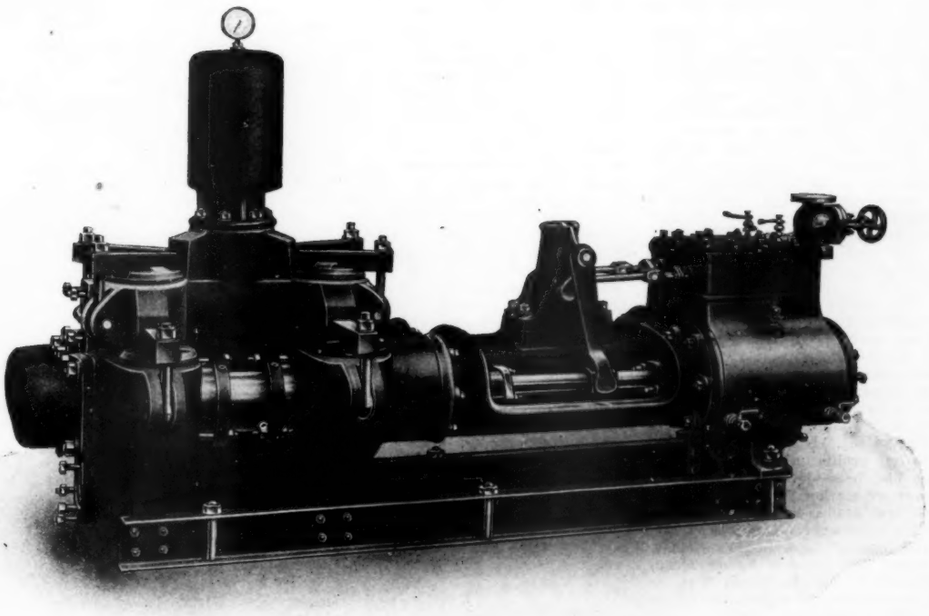
—Photo courtesy "The Ideal," published by Union Tool Co.

Alfred Wirth & Company
Erkelenz, Germany



Wirth Vertical Duplex and Triplex Power Pumps

Wirth Rotary Slush Pumps



HOT GALVANIZED STEEL DERRICKS

Interrelation of World's Oil Fields

Productive Performance of Each Area Has Influence on Others. Tapkers Now an Important Market Factor

By L. M. Fanning

In supplying the world's oil requirements, all existing oil fields are affected to a greater or less extent by the productive performance of each other. There is, in fact, a close interrelation between the oil fields of the world, for big fleets of tank steamers have been developed to bring to refineries and to the markets, oil produced in remote territories.

Any pronounced natural productive restriction in existing fields has its stimulating effect upon other producing or prospective oil areas. Contrarily, the finding of new prolific and accessible oil sources has its retarding effect upon other fields. However, up until recent years new sources of supply have been readily absorbed without any great apparent effect upon other existing fields. This has been due to the widening demand for petroleum. In certain instances, the finding and development of new oil production has directly created for itself a market that previously did not exist. An important factor in considering the interrelation of the world's oil field is, however, the grade of oil uncovered; a low grade oil naturally not having the same economic relation as a high grade oil.

If Production Had Failed

It would be interesting to speculate upon oil conditions today had American production failed to increase from its level of five or ten years ago. In the first place, consumption could not be expected to have assumed its present proportions and the automobile would be some years behind what it is at present. But present agencies of consumption, such as the automobile, would certainly have produced a progressively increased demand for oil, to fill which would have stimulated the American petroleum industry in its development of foreign oil sources. Given this situation, today's ranking of oil producing countries would probably be quite different, and United States refineries would be running a much larger proportion of foreign crude through their stills than at present.

The most important foreign development in productive results in recent years has been in Mexico, where a relatively small acreage has yielded over 1,000,000,000 bbls. of oil over 60 per cent of which came from beneath a stretch of land approximately a mile wide and 45 miles long, the southern district.

Mexico's Market

The bulk of Mexico's oil has been imported by the United States and been topped in American refineries. Thus we have seen American production, itself phenomenally increased, supplemented by imports. This fact has been cited to illustrate our present dependence upon foreign oil. However, for several years after prolific and accessible oil supplies had been developed in Mexico there was no market for that oil. The oil was low grade, largely a fuel oil. It became necessary to create a market for it and years of pioneerin gin salesmanship, given final impetus by emergency requirements during the World War, resulted in the wide use of Mexican oil on ships and in industrial plants in competition with coal. Therefore, our dependency upon Mexican oil has been to a large degree a dependency that would not have been felt if Mexican oil itself had not created the market. Moreover, the extent of our dependency on Mexican oil is not accurately shown by simply citing the total imports from that country, as much Mexican oil has naturally moved to the country having the refinery facilities and is then reshipped as fuel oil to foreign countries or loaded at American ports as bunker oil on foreign vessels.

Increasing Factor Here

In recent years, however, due to improvements in refinery methods, Mexican oil has been an increasing factor in the American markets as regards its yield of gasoline. This is true even with the great decline of production in the Southern or light oil district of Mexico. It has just been stated by one of the largest producing and refining companies in Mexico that it is getting 25 per cent gasoline from heavy Mexican oil.

The following table shows Mexican production and United States imports of petroleum over a period of years:

Year—	Mexican Crude Oil Production Barrels	*United States Imports of all Oil Barrels
1910	3,634,000	571,000
1911	12,553,000	1,461,000
1912	16,558,000	6,911,000
1913	25,696,000	16,978,000
1914	26,235,000	16,913,000
1915	32,911,000	18,139,000
1916	40,546,000	20,797,000
1917	55,293,000	31,528,000
1918	63,828,000	38,944,000
1919	87,073,000	54,161,000
1920	163,540,000	108,794,000
1921	193,398,000	128,783,000
1922	182,278,000	135,947,000
1923	149,472,000	99,608,000

*Practically all United States imported oil comes from Mexico.

Persian Development

Another interesting example of the competive interrelation of the world's oil fields is the Persian development. Persia got its real start when the British Government took steps to control and develop the fields accessible to the Persian Gulf as a source of fuel oil supply for the then proposed conversion of Admirality vessels from coal to oil burning. Regarded in this light, it was a specialized development, itself dependent upon the operation of a new Admiralty policy creating a demand or a desire for an insurance of supply, the new Admiralty policy to some extent dependent upon the development or assurance of this oil supply. The World War broke out a year or so after the British plans in Persia had been consummated; conversion of British battleships to oil burners went ahead on a war basis instead of on a peace basis but while Persian operations were stimulated, the United States and Mexico met the emergency requirements.

Had Mexican production not been developed during the war, it is conceivable that the British would have found it necessary to open up Persia in a big way. As it is, Persian oil was saved and the Maidan-y-Naphtun Field is today one of the world's greatest potential producers. Mexico's war fields, on the other hand, have gone to salt water. Persian oil, which might have been developed intensively to meet the war demand for fuel oil, was saved to take an advantageous position in the European markets as regards the more valuable products, notably gasoline. Containing a percentage of gasoline reported as high as 60 per cent, Persian crude is now being refined in the British Isles, and in 1923 its products displaced substantial quantities of American products in the British and Continental markets.

Never So Many Pools

Experience of the last few years in oil production in the United States has been that of unsuspectedly large production from old and new fields. With wildcatting active and with the advantages of scientific geology and with deeper drilling, the history of the last few years seems susceptible of repetition. While big new pools are scarce at the moment, at no previous time in the history of oil development in this country have there been as many pools covering as wide an area and as promising a prospect as at the present time. True, many of these pools are not yet worthy of the name and may not ever develop. In the case of some, it will take one, two or three years before actual productivity is determined.

However, the increases in oil production in this country have been accomplished only by greatly increased drilling activity. In 1923 there were 24,438 wells drilled in the United States. The combined cost of drilling these wells was conservatively over $500,000,000. At the present time there are some 300,000 wells producing oil in this country, but most of these are older wells producing only a few barrels a day and the bulk of the production comes from only about 25,000 wells, which are new wells less than a year or two old. It is therefore apparent that this country is increasingly dependent upon current drilling campaigns for maintenance and increase in production; in other words, dependents upon the flush production of new pools. This carries with it ever present possibilities of rapid changes involving overproduction at one time and underproduction at another. For instance, failure to develop new pools over any extended period —while not proving that great pools will not eventually be developed to take up any present shortage—might readily make it vital that we obtain an immediate supply from foreign sources.

Price Incentive Abroad

Moreover, with our increasing dependence upon current drilling campaigns coupled with deeper drilling and development work in remote or wildcat territory, the cost of securing production in this country is constantly mounting. This fact, if also taken in consideration with any diminution of immediate supply, necessarily calls for higher prices for crude oil, the economic effect of which would be stimulation of operations in foreign countries. If there should develop an urgency for foreign oil, the resultant activity abroad would have a lasting bearing on the competitive interrelation of oil production of various countries, and, especially, might operate in the long run to extend the life of our own petroleum reserves for many years.

By way of illustration, it would be interesting to speculate on what might have been the effect on foreign operations had there been no development of the Los Angeles Basin fields in California in 1922 and 1923 to more than offset the decline in Mexico's light oil field. Assuming that the new California fields had been just about a year later in coming to the fore, there is little doubt but

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VENEZUELA LOOMING AS NEXT FIELD WITH ACTIVITY BY MANY COMPANIES

By Michael O'Shaughnessy
Author of Venezuelan Oil Handbook

The first commencial oil well in Venezuela was drilled in 1914 by the Caribbean Petroleum Co., then a subsidiary of the General Asphalt Co. A short time afterward the control of the Caribbean was passed to the Royal Dutch group, who continued drilling with success at Mene Grande. Development work was disappointing elsewhere in the Maracaibo Basin until the Barroso No. 2 of the Venezuelan Oil Concessions, Ltd., drilled itself in on December 14, 1922, in the La Rosa Field. This proved to be one of the great wells of oil history. It flowed wild more than 100,000 bbls. a day for nine days before sanding up. The chart below will show the great success attending subsequent development in this field and the present drilling activity. Later the Venezuelan Oil Concessions, Ltd., made the important discoveries west of the Lake at La Paz and Concepion in the district of Maracaibo.

Production

Commercial development of Venezuelan oil fields can be said to date from January 1, 1923.

An attempt is made at a graphic summary in the following chart, of the successful development in the various fields up to November 1, 1924.

Field—	Estmd. Prod. Bbls.	Grav. of Oil Pct.	Companies	Prod. Wells	Wells Drlg.	Depth to Sand	Remarks
Tara	2,000	25	Colon Development Co. (Royal Dutch)	3	2	800 to 2,000	Capped; awaiting transportation.
De Oro ..	2,000	25	Colon Development Co. (Royal Dutch)	2	..	1,000	Capped; awaiting transportation.
La Rosa	30,000	21	V. O. C., Ltd. (Royal Dutch)	7	6	1,500 to 1,900	Shipping.
La Rosa	30,000	21	Lago Pet.	3	3	1,500 to 1,900	Shipping.
La Rosa	30,000	21	Gulf-Creole	1	2		Capped; ocean-loading terminal building.
Mene Grande	15,000	18.5	Caribbean Pet. Co. (Royal Dutch)	27	10	700 to 1,700	Shipping.
Concepcion	10,000	40	V. O. C., Ltd. (Royal Dutch)	1	2	400 to 1,100	Capped; pipe line building.
La Paz ..	20,000	30	V. O. C., Ltd. (Royal Dutch)	1	2	750	Capped; pipe line building.
El Mene..	7,500	36	B. C. O., Ltd.	21	*12	1,000	Shipping; additional pipe line building.
Menito ..	1,000	21	New England Oil	1	..	600	Producing into storage.

*Nine of these wells drilled down to sand; will be drilled in when additional pipe line is completed.

The Standard (New Jersey) has a well capable of small production if put on the pump at Los Barrosos, and the Caribbean Petroleum a similar well at Petroleo in northwestern Perija.

The figures given in the columns "Estimated Productivity" are based on actual runs or on tests made before wells were capped, and in the case of La Rosa it must be noted all wells in that field are pinched in and are allowed to flow only through ¾-inch chokers.

Most of the wells have been drilled on seepages, the discovery well at Concepcion being a notable exception; drilling now is being guided more by geological data. Standard tools have been used largely until recently, but gradually being replaced by rotary outfits, and star rigs at El Mene.

Transportation

The Venezuelan Oil Concessions, Ltd., is building a 6-inch pipe line from Punta Piedras on the Lake near Maracaibo City to Concepcion, and 4-inch, thence to La Paz. The *British Controlled Oilfields, Ltd., is building an additional 6-inch line from El Mene to Alta Gracia. Both will be completed by January 1.

The Gulf is building extensive ocean

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BOVAIRD

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One spider with three set slips-2″, 2½″ & 3½″,-will handle any tubing job. They can be used on any size or type casing or control head.

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Stroud, Okla.
Independence, Kansas

Texas Gross Production Third Quarter

Production Shows Slight Decline From Second Quarter But Value of Output Drops More Than $16,000,000

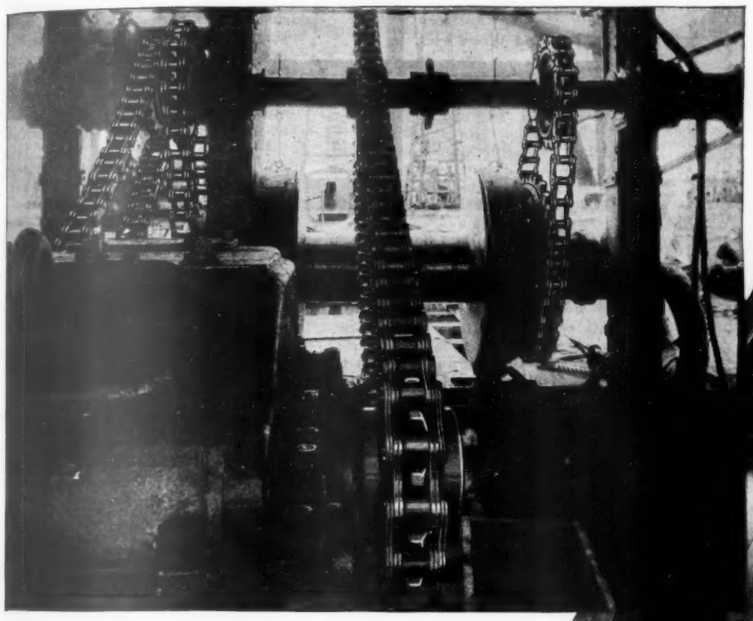
The gross production of crude petroleum in Texas during July, August and September of this year totaled 32,315,688.67 bbls., with a value of $44,551,657.26, according to reports of producers filed with the State Auditor at Austin, Tex., for taxation purposes. This represents a decrease in production of 879,544.72 bbls. as compared to the output for the second quarter of this year and a drop of $16,553,-066.92 in the value of the oil. The drop in value was due to lower prices paid for crude, price reductions starting in the North Texas area on July 17. The report of the producers as filed at Austin, follows:

NAME AND ADDRESS OF OIL COMPANIES AND INDIVIDUALS WHO HAVE FILED STATEMENTS AND PAID GROSS RECEIPT TAXES FOR THE QUARTER ENDING SEPTEMBER 30, 1924

Name and Address—	Barrels	Value
M. L. Aaronson, Tulsa, Okla.	147.43	$ 112.27
A B C Oil Co., Electra	1,580.28	2,382.76
J. S. Abercrombie, Houston	3,560.07	5,110.56
Acorn Oil Co., Beaumont	4,122.34	5,969.78
Ada Belle Oil Co., Batson	31,755.23	46,396.80
Adams & Oldham, Beaumont	939.30	1,336.38
Adamson Oil & Gas Co., Mexia	No bbls. given	3,004.56
Admiral Oil Co., Fort Worth	487.31	520.95
A. L. Agate, Trustee, Eastland	76.24	133.42
A. L. Agate, Trustee, Eastland	521.24	651.55
Alanso Jr. Oil Producer, Laredo	12,678.74	9,382.93
Alice Oil Co., Fort Worth	298 10	381.08
All-American Oil & Gas Co., Oklahoma City, Okla.	112.66	178.14
E. M. Alworth, Laredo	10,826.83	8,046.31
N. L. Amster, Ardmore, Okla.	13,668.74	20,060.68
American Refining Co., Wichita Falls	32,163.07	47,324.44
American Texas Oil Co., San Antonio	647.34	696.40
Amicable Life Insurance Co., Waco	504	630.00
E. J. Anderson, Wichita Falls	4,436.38	7,364.39
Andrews Petroleum Corp., New York City	8,293	6,614.33
W. R. Andrews et al, Breckenridge	9,876.48	13,804 25
Andrews & Arnold, Wichita Falls	100.68	145.62
Apple-Brandeberry Oil Co., Wichita Falls	12,175.37	22,164.24
Apple-Brandeberry Oil Co., Wichita Falls	20,078.69	30,903.11
H. Appleman, Tulsa, Okla.	111.73	176 49
Arkansas Fuel Oil Co., Pittsburgh, Pa.	6,925.73	10,570.31
Arkmo Oil Co., Somerset	2,598.83	2,867.28
Arnold and Frazier, Putman	435.56	641.93
M. J. Arnold, San Antonio	585.05	670.94
Ascot Co., Wichita Falls	1,960.53	2,618.29
Ashe Syndicate, Fort Worth	515.62	885.91
Associated Oil Co., San Francisco, Calif.	27,484.49	24,933.92
Associated Petroleum Co., Fort Worth	20,361.02	29,009.03
Atlantic Oil Producing Co., Dallas	689,448 03	937,302.84
Astec Petroleum Co., San Antonio	897.81	676.56
K. E. Bailey, Tulsa, Okla.	393.66	352.35
Bailey & McClure, Wichita Falls	1,250.73	1,644.54
Baggett & House, Cameron	2,675.12	3,521.54
Baker Oil Co., Inc., Houston	5,843 13	8,764.70
F. C. Baldwin et al, Fort Worth	7,919.04	13,141.76
T. G. Barkley, Sour Lake	1,780.91	2,416.82
Barkley & Crotty, Ranger	18,719.88	31,241.39
Barkley & Meadows, Corsicana	65,030.81	92,391.23
Barkley & Meadows, Wichita Falls	67,221.13	110,332 64
Barnhart & Easton, Wichita Falls	3,532.17	4,670.44
A. L. Barrington, Brownwood	282	312.00
Wm. Bartlett Co., Electra	873.34	1,134.70
M. J. Bashara, Wichita Falls	9,210.60	14,403.38
C. E. Basham, Wichita Falls	169	270.10
Bass & Dillard, Wichita Falls	25,111.80	35,755.74
Bass & Dillard, Wichita Falls	3,034.92	4,581.57
Basnara & Unice by Geo. F. Bashara, Waco	288	360.00
Bay Oil & Gas Co., Mirando City	3,426.39	2,722.05
George Beggs Strip, Fort Worth	5,207.31	10,104.25
Mills Bennett, Houston	90,461.37	113,710.94
W. L. Benson & Co. and Empire Gas & Fuel Co., Robinson, Ill.	1,958.24	3,097.55
Mrs. B. Y. Benton, Uvalde	1,401.67	2,021.32
J. Beren, Dallas	111.83	150.39
J. Beren, (June 30, 1924), Dallas	159.10	284.93
Bexata Oil Co., San Antonio	3,305.41	4,119.68
Big 4 Consolidated Oil Co., El Paso	494.04	859.95
Big Lake Oil Co., Pittsburgh, Pa.	262,047.18	227,969.06
Biggs Oil & Gas Co., McKinney	884	1,397.30
Big State Oil Corp., Dallas	1,324.11	1,324.11
Bell Burk Oil Co., Waco	775.90	1,247.66
J. P. Benkendorfer, San Antonio	1,500.13	1,982.27
Eli D. Bernstein, Oklahoma City, Okla.	386	570.00
Wm. A. Biel, Von Ormy	48	62.00
Big 5 Oil Co., Cisco	3,145	4,618.54
Black Cat Oil Co., Electra	3,877.25	5,091.60
Blakely Co., Houston	25,745.26	37,240.55
Bleakley & Kinnison, Wichita Falls	2,217,61	3,507.44
Rosa E. Blevins, Houston	2,165.99	2,999.90
Bliss & Wetherbee, Shreveport, La.	7,226.69	11,876.97
Blue Bird Oil Corp., Houston	10,649.42	13,377.30
Bluebonnet Oil Co., Wichita Falls	1,408.54	1,993.33
Blue Bonnet Petroleum Corp., San Antonio	3,163.07	3,920.17
C. W. Boller, Wichita Falls	4,338.05	5,907.80
W. T. Bobo, trustee, Eastland	441.80	614.51
Bonchil Co., Wichita Falls	4,415.64	6,677.63
Borealis Oil Co., Dallas	4,876.21	7,251.82
Boyd Oil Co., Dallas	201,737.74	$12,535.75
W. H. Bradstreet & Co., Wichita Falls	811.55	1,189.75
Bradley Oil Co., Wichita Falls	67,067.22	105,460.27
A. J. Breman, Putnam	4,265.42	6,482.50
Bridwell & Palmer, Wichita Falls	4,693.91	5,867.39
Bridwell, Heydrick & Palmer, Wichita Falls	3,727.72	3,727.72
Bridwell, Heydrick trustee, Wichita Falls	31,060.48	43,832.02
Samuel Bright, Wichita Falls	2,107.40	2,634.25
Brinkley Producing & Refining Co., Pittsburgh, Pa.	1,036.76	1,619.94
Brittan and Ritchie, Strawn	6,691.87	9,842.40
L. P. Brothers et al, Deanemona	13,830.64	22,460.54
Brothers Oil Co., Inc., Tulsa, Okla.	11,750.37	17,431.27
George I. Brown, San Antonio	3,096.40	3,887.81
Brown & Co., Inc., Breckenridge	1,688.21	2,138.42
Mrs. Carrie L. Brown et al, Orange	28,943.87	42,829.26
Dr. E. W. Brown estate, Orange	13,938.37	23,336.13
Brownwood Prod. & Ref. Co., Brownwood	2,958.33	4,728.50
H. J. Bruce, Wichita Falls	2,235.27	3,013.81
Bryan Oil Corp., Wichita Falls	3,430.53	6,346.48
J. H. Buchanan, Nacogdoches	25.60	$1.20
S. R. Buchanan, Batson	18,743.95	29,132.56
Buckeye Development Co., Columbus, Ohio	310.90	432.33
Buffalo Texas Oil Co, Buffalo, N Y.	3,401.79	5,083.37
Bullington, Lee, Pendleton and Hammon, Wichita Falls	13,167.67	17,776.35
Burk Burnett, Jr., Oil Co., Fort Worth	814.64	1,076.51
Burkburnett Production Trust, Wichita Falls	2,656.09	4,338.80
Burk Venus Oil Co., Dallas	223.925	355.31
Burley Oil Co., Humble	5,863	8,501.00
J. K. Burr, San Antonio	843.17	1,023.14
W. W. Bynum, Minerva	2,963.83	3,317.73
Cal-Bro Oil Syndicate, Tyrone, N. M.	7,881	10,880.82
Caldwell Guadalupe Pickup Stations, Luling	9,326.51	8,478.65
Caldwell Oil Co., Gonzales	29,380.70	27,632.05
California Co., Colorado	87,894.18	85,893.44
Caltex Oil Co., Spokane, Wash.	1,122	1,312.71
Camp Oil & Gas Co., Wichita Falls	67,671.31	100,346.12
Canyon Oil & Gas Co., Inc., Cross Plains	7,915.55	10,827.53
Carnahan Producing & Refining Co., Canton, Ohio	27,678.52	29,062.44
Roy I. Carter, Wichita Falls	23,323.22	28,386.14
Carteret Oil Co., Jersey City, N. J.	3,319.27	4,149.08
Carey & Yarborough, Wichita Falls	4,703.78	6,489.55
Caruthers Co., San Antonio	2,790.57	3,265.28
Cassoday Oil Corp., Fort Worth	1,082.56	1,408.31
Cavin & Lowry, Olney	6,645.22	7,539.54
W. H. Cavitt, Batson	956.40	1,168.48
P. A. Chapman, Jr., Eastland	1,902.25	2,546.36
Champlin and Winkler, Inc., Holdenville, Okla.	216.92	353.56
C. G. Chandler, San Antonio	22,614.72	16,972.39
P. A. Chapman estate, Waxahachie	100,297.64	142,524.80
Chappell and Hadcock, Putnam	359.71	506.96
N. B. Chenault, Wichita Falls	808.35	1,266.39
Chenault & Lea, Wichita Falls	82,461.14	109,756.21
Cheney and Ansac Oil Corp., Graham	4,273.86	7,571.19
George Christie, Moran	1,721.96	2,656.24
Christie Brothers, Wichita Falls	11,752.52	19,405.99
Cintex Petroleum Syndicate, Laredo	30,746.39	22,744.78
Cisco Drilling Co., Dallas	5,029.32	7,286.72
Clara Oil & Production Co., Beaumont	479.20	768.32
Arthur Clark, Wichita Falls	7,867.06	14,536.92
N. P. Clark, Wichita Falls	972.28	1,341.76
R. R. Clark, Wichita Falls	7,978.5	12,332.83
Clark, Harbin & Baldridge, Wichita Falls	51,057.14	66,534.63
Clem Oil Co., Houston	1,177.17	1,672.11
Cline Oil Co., Wichita Falls	6,571.06	9,199.48
W. D. Cline et al, Wichita Falls	653.62	849.70
Charles E. Clough, Wichita Falls	1,375.33	2,055.31
Aaron Cohen, Wichita Falls	17,397.52	24,365.48
Cohen and Lebow Trust, Wichita Falls	1,462.85	2,320.23
Cochard and Williams, Moran	342.16	506.35
Comet Petroleum Co., Fort Worth	7,824.76	11,502.40
Commercial Petroleum Co., Wichita Falls	7,026.81	10,171.76
Commercial Petroleum Co., Brownwood	749.17	811.08
Connellee Oil Co., Eastland	194.54	438.21
Conley Delaney & Dyar Brothers, Ranger	2,446.42	3,909.85
Conner Son & Coughley, Gotebo, Okla.	9,112.51	13,392.67
F. T. Connor, Fort Worth	19,343.34	26,823.23
Consolidated Oil Co. of Texas, Wichita Falls	8,283.72	11,106.00
Conway Brothers & Gilman, December 31, 1923, Cross Plains	1,330.08	1,662.44
Conway Brothers & Gilman, September 30, 1924, Cross Plains	11,474.53	16,210.75
Conway Brothers & Gilman, March 31, 1924, Cross Plains	2,311.26	4,343.08
Conway Brothers & Gilman, June 30, 1924, Cross Plains	3,444.32	7,749.70
Coppock & Colman, successors to J. H. Cottom & Co., Iowa Park	2,659.41	3,647.44
Cornhusker Oil Co., Mirando City	19,073.13	14,348.99
Cornucopia Oil Co., Fort Worth	446.88	672.84
Corona Petroleum Co., Jersey City, N. J.	4,368.13	6,614.27
Corsicana Oil & Refining Co., Corsicana	7,627.18	6,954.00
Cosa Oil Co., Dallas	2,325.72	3,562.09
Cosden Oil & Gas Co., Tulsa, Okla.	39,339.50	61,852.14
Cowling and Newell Oil Co., Wichita Falls	970	1,260.94
Cox, Boyd and Mitchell, Wichita Falls	327.86	461.79
Edwin B. Cox, Ardmore, Okla.	7,011.47	10,418.61
Coyle-Concord Oil Co., San Antonio	4,005.22	4,662.77
Coyle-Concord Oil Co., San Antonio	5,058.67	6,688.25
Cremer & Martin, San Diego, Cal.	315.30	497.95
Critton Brothers & Lacey, Caddo	51,496.52	80,396.44
J. E. Crosbie ,Tulsa, Okla.	886.58	1,262.49
T. S. Crosbie, San Antonio	3,462.55	5,285.70
Crown Oil & Ref. Co., Houston	28,126.95	41,651.63
L. R. Crowell, Dallas	189.92	341.45
Crystal Oil Corp. of Texas, Denver, Colo.	3,286.54	5,199.02
Culbertson Co., Wichita Falls	16,898.46	25,135.29
Dale-Knotts Oil Co., Wichita Falls	399.99	506.41
Dale Oil Corp., Wichita Falls	53,535.38	78,492.54
Dallas-Bradford Oil Co., Dallas	937.88	1,430.53
Joe and M. O. Danciger, Wichita Falls	70,760.53	62,604.71
S. B. Daniel, Wichita Falls	1,668.41	2,154.30
Darby Petroleum Corp. of New York, Tulsa, Okla.	1,233.86	1,858.33
L. R. Davis, Tulsa, Okla.	215.76	325.37
Thomas Davis, Somerset	1,099.64	1,276.36
Dayton Oil Co., Dayton	3,731.93	4,723.68
Deep Sands Oil & Gas Co., Corsicana	324	324.00
J. S. Dennis, Moran	6,702.80	9,584.03
Derby Oil Co., Dallas	54,270.23	77,363.24
B. Deutser, trustee, Beaumont	871.87	1,393.61
Developers Oil & Gas Co., Wichita Falls	935	1,168.75
Dibble Oil Co., San Antonio	4,148.91	3,849.06
Dibble Oil Co., June 30, 1924, San Antonio	3,183.96	2,680.75
Dickey Oil Co., Supplemental, Putnam	747.23	1,173.90
Dickey Oil Co., Putnam	2,484.50	4,020.93
Dillon Glasscock Co., San Antonio	786.66	866.50
Domestic Oil Co., Cisco	3,913.88	6,437.65
C. W. Donley, Ranger	2,109.44	2,974.31
C. J. Donnelly, trurtee, Fort Worth	1,364.88	1,899.20
D. S. Donovan, trustee, Wichita Falls	2,943.18	3,678.98
Drillers Developing Co., Electra	6,461.51	8,277.39
Dunigan and Herrmann, Breckenridge	13,722.02	22,345.07
Duquesne Oil Corp., Eastland	4,092.25	6,439.56
H. H. Durston, trustee, Houston	2,511.59	3,671.31
Dyar Brothers, December 31, 1923, Ranger	4,256.07	5,060.21
Dyar Brothers, June 30, 1924, Ranger	6,303.24	12,081.51
Eagle Creek Oil Co., San Francisco, Cal.	1,605.29	2,681.28
East Batson Oil Co., Batson	11,667.61	17,034.71
Eastland Oil Co., Fort Worth	37,522.19	55,998.43
E. S. Easton, Wichita Falls	191.44	275.59
Ebberts-Folloure & Herberts, Beaumont	2,808.80	4,100.84
Webb T. Eby et al, Eastland	1,440.29	1,870.70
Eddy Oil Co., Guffey	1,218.41	1,744.48
Edgerly Petroleum Co., Orange	59,615.64	85,195.29
J. E. Eggers, San Antonio	2,006.09	2,320.72
El Dorado Oil & Gas Co., Ranger	4,079.53	6,415.45
Electra Gulf Oil Co., Electra	17,620.64	25,726.13
Ellis & Anderson, San Antonio	251.42	284.57
Elmore Oil & Gas Trust, Wichita Falls	6,373.61	10,766.69
El Paso Burkburnett Oil Co., El Paso	127.57	210.41
L. M. Emlet, St. Louis, Mo.	5,308.49	580.66
Empire Gas & Fuel Co., (Maine), Bartlesville, Okla.	181,261.80	286,393.64
Empire City Co., Tulsa, Okla.	85.17	116.65
Enterprise Oil Co., Atlanta, Ga.	689	1,021.81
Equity Oil & Ref. Co., Wichita Falls	9,082.62	11,353.27
David Erickron, Wichita Falls	379.86	563.22
Erie Investments, Ltd., of Texas, Toronto, Canada	1,022.58	1,186.19
Eureka Drilling Co., Wichita Falls	825.12	1,179.94
Evangeline Petroleum Co., Wichita Falls	6,317.41	8,781.20
Evans Oil Co., San Antonio	6,751.80	6,282.14
H. E. Ewing & Co., June 30, 1924, Los Angeles, Cal.	6,847.23	13,694.46
H. E. Ewing & Co., Los Angeles, Cal.	3,383.40	5,069.85
Exley and Covert, Wichita Falls	689.08	896.40
Falls Petroleum Co., Wichita Falls	1,647.01	2,209.41
Farish & Ireland Lease, Houston	75,622.13	110,886.91
Farish, Watts, Collins & Crosby, Houston	2,092.76	2,411.94
Fearis Givins Oil Co., Fort Worth	1,367.04	1,822.36
Federal Oil Co. of Texas, Cleveland, Ohio	18,946.59	29,919.84
Fensland Oil Co. of Texas, Denver, Colo.	5,619.62	7,284.46
Ferguson & Watson, Electra	6,131.61	7,664.51
Ferguson, Hawkins & Hester, Wichita Falls	1,945.66	2,636.48
Henry J Fisher, Newport, N. Y.	6,544.49	11,959.87
Fisher & Gilliland, Wichita Falls	1,042.7	1,564.05
Five Rivers Oil & Gas Co., Wichita Falls		

(Continued on Page 166)

Baldwin—A Giant In Strength—
Aids Production in Oil Fields
COSTS MORE—WORTH MORE



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Accurate to the thousandth of an inch

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Heavy Duty Oil Well Chains

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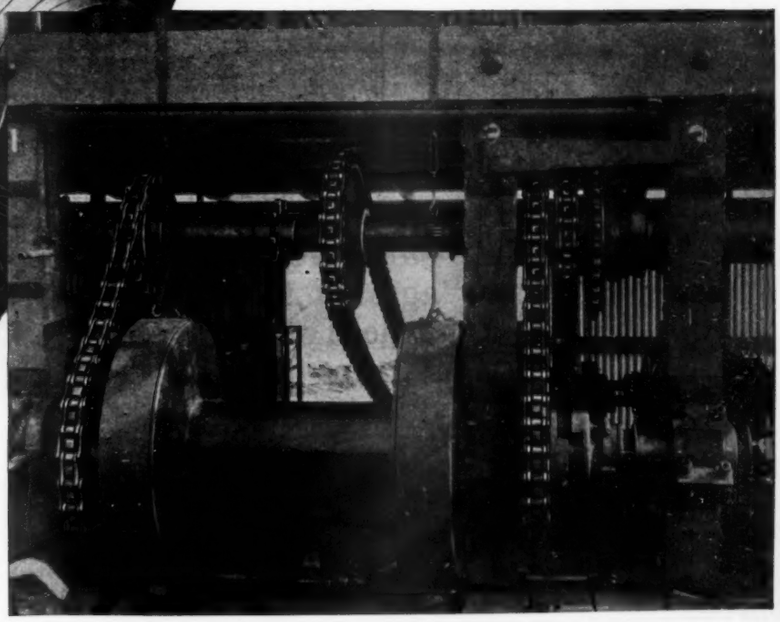

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(Sand Fighter)
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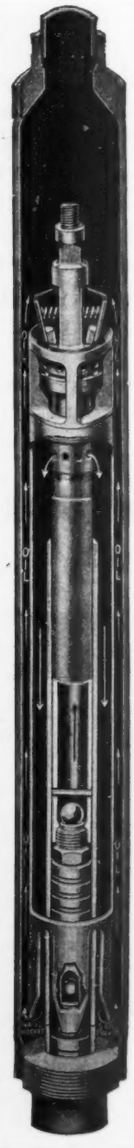

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In operation over sixty days in Burbank well—against best time of other Pumps four days.

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St. Louis, Mo. Tulsa, Okla.

METHODS OFFERED FOR ESTIMATING RESIDUE SUPPLIES OF GAS, OIL

(Continued from Page 64)

base it on the behavior of adjacent wells. Always, however, chancing the presence of fissures or main water channels and the proximity of the source of water supply, i. e., if the main water supply were from up the dip, the wells farthest down the dip would produce most oil, subject to main water channels affecting them.

Dry and Wet Fields

The gas fields of West Virginia are classed as dry fields. The Tilbury Field in our own province is a shining example of a wet field, and the Mexican fields illustrate the flow from water pressure.

The flow from dry fields has been described by S. C. Herold as volumetric flow; from wet fields as capillary flow; and from Mexican fields as hydraulic flow.

The principal of capillary flow has been shown very clearly by the experiments of a French scientist, which explained the discrepancy in the recoverable volume in dry and wet fields. He filled a capillary tube with bubbles and then applied pressure to one end of the tube; the nearest bubble clung to the ube and changed its shape before it moved, the side farthest from the pressure becoming nearly vertical. It moved an appreciable distance toward the second bubble before that bubble stirred; it, in turn, changed its shape as the first one did. The third bubble behaved as did the first and second. If there were ten bubbles in the tube, all equadistant, the bubble nearest the pressure inlet would move ten times as far as the one at the closed end of the tube. As another experiment, he heated the tube between each of these bubbles and blew a bulb, leaving the capillary tube between each bulb the length of a bubble or drop of water. When pressure was applied to one end, the drop of water clung to the capillary opening until the side farthest from the pressure changed its form from concave to convex. The pressure required to force the water bubble from the small opening has a proportion to the size of the opening. As I am only giving these experiments from memory, I cannot say what proportion is. the nearest approach to field conditions that I have ever heard of.

Variations in Pressure

From this experiment, it can readily be seen why all the gas or oil cannot be got from pay "sand" and why the open flow falls off more quickly than the rock pressure. It was noticed in 1923 in the Tilbury Field that when the wells were shut in and disconnected from the lines for ten days, the pressure was 40 pounds higher than in 1922, when the wells were shut in for not more than twenty-four hours. The pressure would no doubt increase for a month or more, depending on the well. This shows that the time element plays an important part in the equalizing of rock pressures. As each bubble is forced from the small orifice, an appreciable time is taken up by the gas flowing through this orifice, and this flow is perhaps retarded by another drop of water filling the orifice which cannot be removed until the gas accumulates with sufficient pressure behind it. This explanation also shows why the open flow declines more rapidly than the rock pressure. As you know, the longer the well is open, the less the open flow; and for the same reason, the older the well the less the open flow.

In volumetric flow, as there is no water to restrict the flow of gas, the only resistance is the surface tension or friction, and wells shut in for few days will give the true rock pressure of the field.

Many valuable predictions can be made as to how close together wells can be drilled, the number of wells that can be drilled, the average decline in open flow and rock pressure of new wells, the production per acre, the ultimate production of the field, and the life of the field in years. A most important item in determining the total production is the abandoned wells. The open flow and rock pressure of these should be taken when they are about to be abandoned. In most cases that have come to my observation, they have been allowed to fill with water and stand for a year or more and the open flow and rock pressure would indicate they were good wells until suddenly drowned out. If faulty field work or carelessly kept records is accountable for this, an explanation should be made in the field notes that will allow the engineer to make due allowance for such wells. The estimated rock pressure and open flow should be shown at the time of abandonment, and whether there was a casing leak or an invasion of water from below and other such facts pertaining to the cause of abandonment.

In keeping annual records of rock pressure and open flow, it can be seen that it is very necessary to record them in the same manner every year. Open flows taken by minute pressure are quite satisfactory if taken in the same way each year. Errors will be constant and will not materially affect the result. They are expected to compensate. If the method is changed, both methods should be used for two successive years in order that past records may be useful in making comparisons. If these are taken carefully and in the same manner each year, the residue volume (not production) calculated by Boyle's law and based on the year's production and drop in rock pressure should compare accurately. A trial of this kind will show how little dependence can be placed on many such measurements and how important it is to keep accurate records. Only by taking the average of a number of years can we approach an accurate result.

PRODUCING OPERATIONS IN RUMANIA INCREASED

(Continued from Page 119)

will proceed to the division of the region into leasable perimeters in three groups. The institution of exploitation concessions is subject to fixed regulations which involve some of the principal features of the law asserted by foreign property owners to be equivalent to confiscation.

American Objections

For instance, the law provides that a concession is granted to enterprises constituted as Rumanian mining joint stock companies. The objection by American and other foreign interests was in large part to the provisions requiring that 51 per cent of the stock of such companies must be Rumanian owned and that 70 per cent of the personnel of the operating forces must be Rumanians. Exception also was taken to certain drilling regulations and a plan to turn over existing pipe lines to the Government.

Producing operations in Rumania have been satisfactory during the year so far as volume of production is concerned. The daily average production during August was approximately 38,000 bbls., or at the annual rate of 13,870,000 bbls., the largest monthly production since the World War. The figure exceeds the average of 1913, with Rumania reached the highest annual total it has ever known.

The significance of the figure is accentuated when it is considered that Rumanian producing wells were methodically destroyed at the end of 1916 when the Germans advanced into that territory. It is estimated that Rumanian production in 1924 will closely approach 13,000,000 bbls. Rumanian production since 1913 follows:

	Barrels
1913	13,555,000
1914	13,327,000
1915	12,030,000
1916	8,945,000
1917	8,721,000
1918	8,730,000
1919	6,618,000
1920	7,435,000
1921	8,368,000
1922	9,843,000
1923	10,000,000
1924 (Est.)	13,000,000

Production for the first six months of 1924 compared with the corresponding period of 1923 follows:

	January-June	
	1924	1923
Prahova	4,811,000	3,780,000
Dambovitza	853,000	1,218,000
Bazau	335,000	221,000
Bacau	167,000	154,000
Total	6,166,000	5,473,000

The increase in drilling work which

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Protect your Tool Joints with SPANG Thread Protectors.

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Three to five times as much service as other jars
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for tank cars is the most economical and efficient paint because it is practical under modern shop conditions, covers better and spreads farther than ordinary paints. It dries under all sorts of weather conditions —and it wears!

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PAINTS FOR THE OIL INDUSTRY

characterized 1923 has continued during 1924. In 1923 about 120,000 meters were drilled, as against 84,052 meters in 1922 and 47,127 meters in 1921. At the end of 1923 there were 907 producing wells and 501 wells being drilled, nearly all in the district of Prahova, as against 777 producing wells and 410 drilling at the end of 1922. During 1923 the supply of electric power was more regular than in previous years, for in May the new electric power station at Floresti began to work and satisfied all requirements.

Modern drilling methods, presented by both rotary and cable tool methods, have gradually superseded the old pole-tool method of the Canadian-Galician type, according to T. V. E. Grigorescu, B. Sc., writing in Oil Engineering and Finance, September, 1924. Fields such as Moreni, Gura-Ocuitzer and Baicoi are nearly all drilled by former methods whereas the fields of Ochiuri, Runcu and Arbanashi are still drilled by pole-tool system, one reason being that the latter system is more suited to the peculiar formation met with and also because the companies working in those fields are more accustomed to such drilling methods. Speaking generally, however, practically half the drilling is carried out by the hydraulic system, and the tendency is to increase the percentage of wells drilled by this method where conditions will allow. The hydraulic rigs in use are of American and European origin, the former being the rotary mud flush type and far simpler in design, whereas those of European origin are of the water flush type and are far too complicated.

Schools of Drilling

Before the war labor was recruited chiefly from abroad, but now such labor is practically all Rumanian. At first the foreign labor was replaced by the native labor because of the war but later on becoming valuable servants of the oil industry they were retained and encouraged, so they meet today all labor requirements. The Government also sought to improve the situation and formed schools of drilling in every field, and also a central school at Campina where over 300 drillers are trained yearly.

As a result of the introduction of the three-shift day there has been a shortage of labor, but by inducing workmen to continue to work a 12-hour shift, with double pay for the four hours overtime, and by the help of the drilling schools, it is expected that this difficulty will be overcome.

Perhaps one of the most remarkable facts in the oil world within the last five years was the quick recovery of the Rumanian oil industry. After complete destruction during the war and handicapped since by Government interference, the results obtained have exceeded the expectations of the most optimistic, thus showing once more the high potentiality of the oil fields of Rumania.

GROWTH OF WORLD'S OIL BUNKERING PORTS

(Continued from Page 126)

Sea, Persian Gulf, India, Dutch East Indies, Malay Peninsula, China, Japan, Australia, South Africa, South America, etc. At many ports may be found three or four separately owned oil installations. The capacity of the world's commercial oil tank storage at sea and river ports (excluding Government tanks, and as far as separable tank farms on oil fields and at refineries, also inland distributing stations) is probably not much less than 20,000,000 tons, (140,000,000 bbls.), of which Europe accounts for nearly 3,000,000 tons, (21,00,000 bbls.), U. S. A., Canada, Mexico, etc., probably some 15,000,000 tons, (105,000,000 bbls.), and the balance is distributed over Asiatic ports.

"The general run of fuel oil bunkering tanks at depots of importance is from 2,000 tons to 10,000 tons. A very usual type of steel tank for large storage was for a long time, and to an extent still is, the 55,000-bbl. tank. There are probably a few instances in which the limit of 10,000 tons is exceeded for special circumstances. The limitations of tank capacity are economical and practical rather than technical and mechanical, as is the case also with oil tank steamers. At depots that are situated at a considerable distance from the sources of oil supply, the size of the shore tanks will be governed to some extent not only by the extent of the prudent reserve necessarily held against a given turnover, but also by the necessity of providing a margin of capacity to receive as a replenishment the minimum quantity that can be economically and conveniently delivered by the sea-going tanker, having regard to her trim and whether tanks at some neighboring port are being replenished on the same voyage."

Active Competition

Fuel oil stations have been established by leading American and foreign companies in active competition with each other. The Federal Trade Commission in its report made in 1923 on foreign ownership in the petroleum industry points out that several foreign companies were among the first to appreciate the advantages inherent in the use of fuel oil and the members of the Royal Dutch-Shell group were among the pioneers in this branch of petroleum marketing. Continuing the report says:

"At the present time a British steamer starting from New York City making a trip around the world and calling at every important port in Europe, along the Mediterranean, in India, the East Indies, China, Japan, Australia, New Zealand and the West Coast of North America, and then returning to New York City through the Panama Canal, would find oil-bunkering stations operated by the Royal Dutch-Shell group or the Anglo-Persian Oil Co. at every important port of call. Oil-bunkering facilities operated by an American company would by available to an American steamer on a similar voyage at the principal ports of Western Europe and the Mediterranean, but between the Suez Canal and Singapore in the Malay Peninsula fuel oil would have to be purchased from foreign companies, while fuel oil could be secured from American companies at only a few ports in the Orient, Australia, or New Zealand.

"The fuel-oil stations of the Royal Dutch-Shell group are located in all parts of the world, while American companies operate fuel oil stations in the important ports of North and South America, and in a large number of ports of Western Europe, along the Mediterranean, and at certain ports on the Eastern Coast of Asia.

"The Standard companies have an aggregate bunkering capacity of about 8,500,000 bbls. in America, Europe and along the Asiatic Coast. The Standard Oil Co. (New Jersey) operates fuel-oil stations with about 6,000,000 bbls. capacity, the Standard Oil Co. (California) has about 1,500,000 bbls. capacity, and the Standard Oil Co. of New York owns stations with a capacity of about 850,000 bbls. The so-called independent companies together control storage capacities of about 20,000,000 bbls., and aproximately one-half of this aggregate capacity is operated by the Doheny interests (Pan American) principally in the United States, Mexico and Brazil. The Gulf Oil Corp. controls a capacity of about 2,300,000 bbls., The Texas Co. 2,700,000 bbls., the Sinclair interests have about 2,900,000 bbls., while the Union Oil Co. of California and the Associated Oil Co. each control over 1,000,000 bbls. capacity.

"The Royal Dutch-Shell group has about 1,250,000 bbls. capacity at 10 stations in the United States and its possessions, while it has about 110 additional tsations all around the globe, for which the present capacity is not available."

MORE SERVICE FOR PINE BLUFF

OKLAHOMA CITY, Okla., Dec. 15.—An expansion of service territory in Pine Bluff, Ark., and vicinity by the Arkansas Natural Gas Company is to be made soon at a cost of $100,000, officials of the company announce. Some parks and the country clubs are to be served. A considerable sum will be spent for repairs and replacing of mains in the city.

At the Landreth Gasoline Co.

In its plant at Breckenridge, Texas, the above Gasoline Company has installed four 16″ stroke Ingersoll-Rand Type XRB Gasoline Extraction Compressors. There is also installed in this plant an I-R Type XPV Expander, shown in the insert.

These machines are rendering excellent service. In the months of February, March and April, 1924, the operating records of this Company showed that the compressors were in service 99.9% of the time.

This installation at the Landreth Gasoline Company is another example of the excellent performance records of Ingersoll-Rand Compressors used for the extraction of natural gasoline.

INGERSOLL-RAND COMPANY
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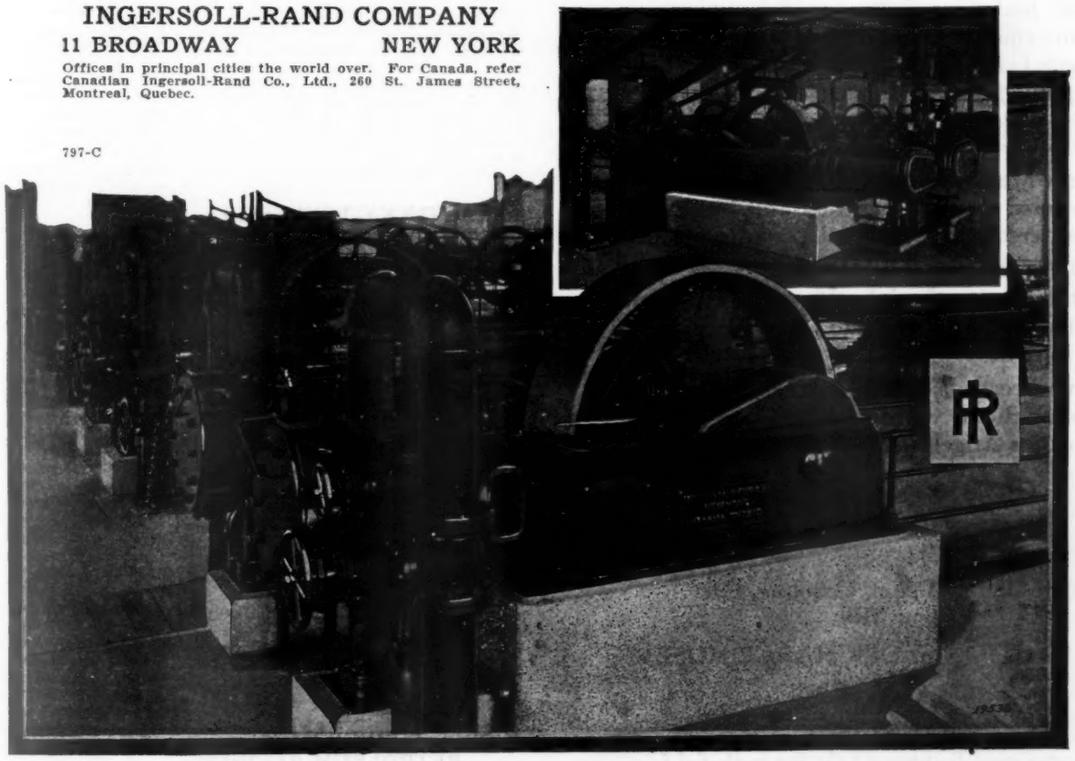
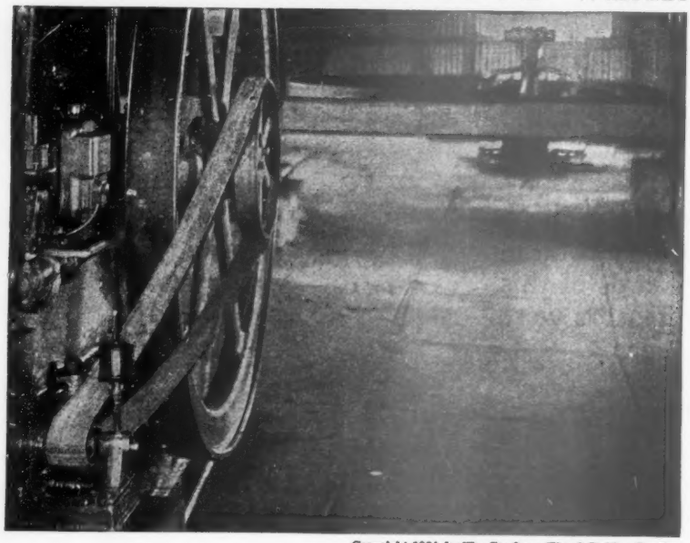


Ingersoll-Rand

GOODYEAR MEANS GOOD WEAR



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PACKING
Asbestos and Rubber Sheet for both field and refinery service

PUMP VALVES

SLUSH PUMP SLEEVES

SWAB RUBBERS

GOODYEAR

EASTERN FIELDS

(Continued from Page 58)

ing farm. In Sheridan district, the Richter Oil Co. is drilling a second test on the J. L. Elliott farm.

Marion County

On Dunkard Mill Creek, Lincoln district, Marion County, the Owens & Machine Co. is building a rig on the J. C. Ice farm. Twelve miles south of Clarksburg, Grant district, Harrison County, R. T. Lowndes is drilling a test on his own farm. In the same section, the Lone Star Gas Co. is drilling on the A. C. Cookman farm. The Grasselli Chemical Co. is drilling on the L. F. Young farm. In Troy district, Gilmer County, the Hope Natural Gas Co. has the rig completed for a second test on the J. M. Woods farm. On Laurel Creek, Wood County, W. J. Wharton has started to drill on the A. B. Wharton farm. In the same district, John P. Shore's test on the S. P. Hendershot farm is a duster in the Berea grit. In Jefferson district, Pleasants County, the Carter Oil Co. has started to drill on the W. P. Dennis farm. In DeKalb district, Gilmer County, Oakey Bell & Co. are drilling a second test on the W. A. Simmons farm. On Big Buffalo Creek, Union district, Tyler County, Morgan Brothers have a rig up on the Terry heirs' farm. In Union district, Ritchie County, Braden, Powell & Co. have a rig completed on the McDonald heirs' farm.

Southwest Pennsylvania

In Morris Township, Greene County, Pennsylvania, the Carnegie Natural Gas Co. has completed a gasser in the Gordon sand at a second test on the S. D. Martin farm. In the same township, the Greensboro Gas Co.'s test on the James Mankey farm is dry in all sands. The hole has been plugged and abandoned. In Washington Township, the Raymond Oil Co.'s No. 7 on the Enoch Brooke heirs' farm is a gasser in the Big Injun sand. In Perry Township, the Moore-Tex Oil Co. has a gasser in the same formation at a test on the W. M. Howard farm. Inthe same township, Kennedy, Brock & Co. have a gasser in the fifth sand at a test on the Spencer Kennedy farm.

KENTUCKY-TENNESSEE

(Continued from Page 50)

to be holding at 25 bbls. from an approximate depth of 1,350 feet. The Black Gum Oil Co.'s No. 8 on the Gourley-Redman tract made 15 bbls. on jack from the Idamay sand.

In the gas field south of the Idamay district, the Rex & Pyramid Company got an excellent gassers in its No. 1 on the W. H. Venable place.

In Estill County, Scott Pratt & Co.'s No. 1 Henry Isaacs, district No. 8 is pumping 8 bbls. from the Irvine sand at about 80 feet below the black shale.

The wildcat of the Petroleum Exploration on the Mowbray-Robinson tract in Clay County was reported dry in the deep sand.

The State Tax Commission reported that the 4 per cent production tax on crude oil will give the State $125,000 for 1924, on basis of returns for the first ten months, which averaged more than $10,000 each. The November revenue was $10,148. The production was 624,569 bbls, valued at $1,014,866.

WORLD SURVEY OF PETROLEUM REFINING

(Continued from Page 83)

And if we, in the United States, with a market for 600,000,000 bbls. of petroleum products a year, produced a negligible amount of crude oil within our own borders, both our Government and the rank and file of our people would get a new vision of the real value of the petroleum industry.

Germany's refining industry is largely in the vicinity of Ratisbon, in Bovaria, at the head of navigation of the Danube River, up which barges convey crude oil from Rumanian fields. Germany used about 11,000 bbls. a day of petroleum products in 1923—produced about 900 bbls. a day within her own borders and has a refining capacity of probably 5,000 bbls. a day.

Practically all of France's producing and refining is confined to the Pechelbronn area in Alsace. In 1923 the production of crude oil in France, by mining and from wells, averaged 1,100 bbls. a day—her Pechelbronn refinery has a capacity of 2,000 bbls. a day—and, last year, she consumed an average of 31,000 bbls. a day of petroleum products.

Europe's Oil Position

There are a number of small refineries, and practically no large ones, in Spain, Italy, Austria, Hungary, Czecho Slovakia, Belgium, Norway and Denmark. Few of them are of our distinctive American type—and it is obvious that American refiners have, to a very great degree, followed the policy of shipping refined or semi-refined oils to Europe. The "geography" of crude oil in Europe has not matched up with either her Governmental or industrial development. The three great oil producing countries—Russia, Rumania, Galicia—have produced oil against an entirely different background, economically, industrially and governmentally, than oil has been produced in America. Three of Europe's major nations are practically without oil—and obviously her refinery development affords the same kind of cross-section as her crude oil production.

Asia's Output

In 1923 Asia produced an average of about 170,000 bbls. of crude oil a day—and consumed about 75,000 bbls. There are about two dozen refineries in all of Asia, with an aggregate capacity of about 133,000 bbls. a day.

Persia produced an average of about 78,900 bbls. of crude oil a day in 1923—and her one giant refinery at Abadan, at the head of the Persian Gulf is reported to have a capacity almost as large as Persia's daily production. The refinery and the production are in the hands of the Anglo Persian Oil Co.—and their first consideration is to supply their great refinery at Llandarcy in Wales.

There are four large refineries in Burma and it is probable that the total capacity of all of the refineries is substantially larger than the average daily production of crude oil—22,800 bbls. per day.

Dutch-Shell in Borneo

Aside from a 5,000-bbl. refinery at Lutong in Sarawak in British Borneo, almost all of the remaining refineries in the East Indies are Dutch-Shell. There is a 15,000-bbl. refinery at Balikpapan on the east coast of Borneo—four refineries with 56,000 bbls. capacity on the island of Java—four refineries with over 15,000 bbls. capacity on the island of Sumatra—and a 1,000-bbl. skimming plant on the island of Ceram, one of the Molucca group.

In all, there are about a dozen refineries in the East Indian Archipelago with a total capacity of over 40,000 bbls. a day, compared with a daily production of about 65,000 bbls. of crude oil.

Japan, with an average production of 4,900 bbls. of crude oil a day in 1923, consumes the products from all of her refineries—and supplements this with about the same amount of imports, as in 1923 she consumed an average of 10,000 bbls. a day of petroleum products.

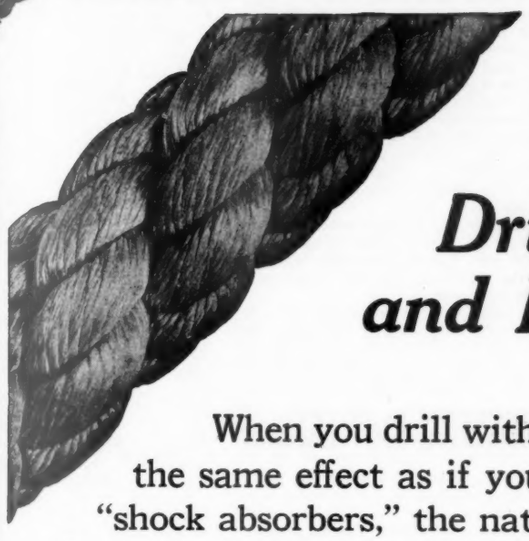
Africa and Australia

Africa has two refineries, both at Suez, at the head of the Red Sea. One is a small Government refinery and the other 1,700 bbls. is operated by a subsidiary of the Dutch-Shell. Egypt has no wood and no coal—and her use for petroleum product is confined largely to kerosene greases and waxes.

There is a 5,000-bbl. Anglo-Persian refinery at Sydney, Australia, that operates on crude from Persia. In 1923 the consumption of petroleum products in Australia and New Zealand averaged about 5,000 bbls. a day—hence this refinery can care for this part of the world.

The industries of the world are today asking the petroleum industry for a total of over 900,000,000 bbls. of products a year.

The refining end of the industry is not only supplying this need but has an ade-



Drill with Manila and Drill Easier

When you drill with a Manila Cable, you experience the same effect as if you were equipping your rig with "shock absorbers," the natural result of which is longer life for your rig. This is true, because the elastic qualities of a Manila Cable absorb the jolts, which is quite a contrast to the effect of a rigid wire line.

The experienced Driller acknowledges the fact that it is easier for him to drill with Manila than with wire. He is provided with a wide range in regulating the tension on the temper screw because of the elasticity of Manila, while it is necessary to adjust the tension on a wire line almost continually.

Columbian Manila Drilling Cable has gained an enviable reputation as a result of dependable service plus excellent wearing qualities. You can obtain a *Columbian Cable* at

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BRANCHES:

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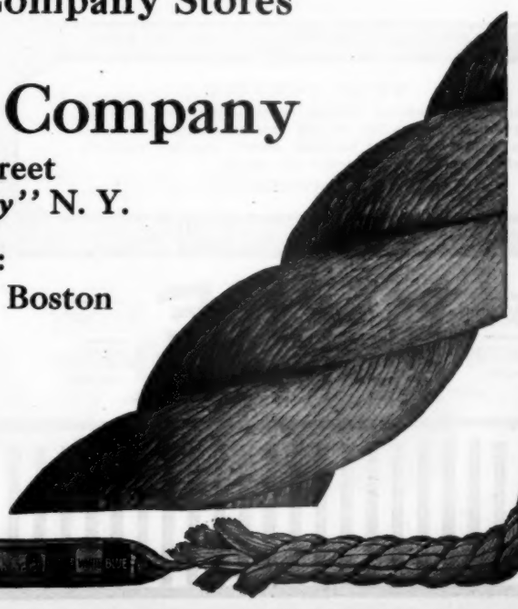
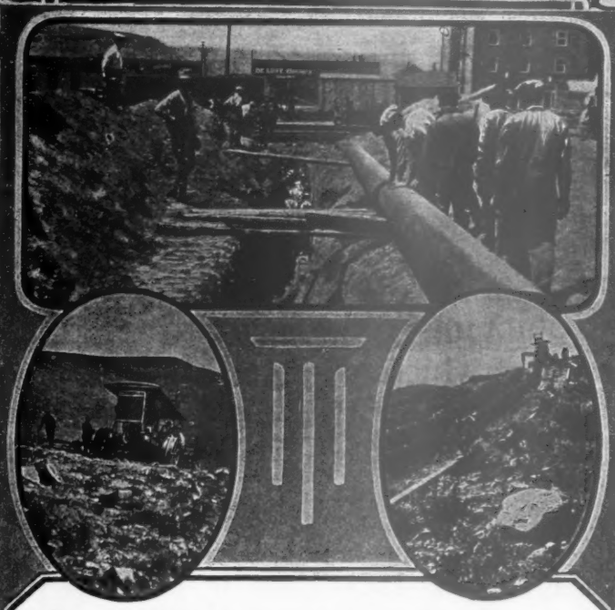


ENGINEERS & CONTRACTORS
IN NATURAL GAS AND OIL



Our Sixteenth Job for This Client

This contract included a city distribution system, as well as main pipe line from field to town including well connections, field regulators, well and line drips, etc. Accepting it, the client writes:—

"Your superintendent has satisfactorily completed the contract for the installation of the gas distribution plant in the city of————. We have this day accepted the plant as completely satisfactory and are now operating it with our own employees. We thank you for the good work your superintendent has done, and the cooperation you have given in this work."

Previous contracts for this client included not only pipe lines, but several gasoline plants and pumping stations, as well.

HOPE SERVICE

Engineering counsel, design, construction and contracting—in pipe lines for oil and gas, oil pumping stations, gas compressing and boosting plants, gasoline recovery systems, city and inter-city gas mains.

UNIT RESPONSIBILITY

HES-23

ENGINEERS CONTRACTORS HOPE Engineering & Supply COMPANY DESIGNERS MANUFACTURERS

MT. VERNON, OHIO, U. S. A.

mated aggregate refining capacity of 1,400,000,000 bbls. a year.

The producing end of the industry is supplying a total of over 1,000,000,000 bbls. of crude oil a year.

There can be no doubt as to the continued growth of the market for petroleum products—or their power equivalent. And there can be no doubt as to our always having a wide surplus of refining capacity—that is merely a matter of construction work that will always travel ahead of the supply of raw material.

The petroleum industry is operating today on a "billion-barrel-a-year" supply of crude oil.

The industries of the world today are operating on a basis that is using only 10 per cent less of petroleum products than the petroleum industry is procuring of raw materials.

The refineries, the connecting link between raw material and markets, have a capacity far in excess of our present supply of crude oil—and our present markets for petroleum products.

PETROLEUM IN EGYPT; SHALE IN SOUTH AFRICA

(Continued from Page 79)

the Hurghada district, 18 of which were non-productive and were abandoned by the beginning of 1923. The 22 wells in operation were then producing about 600 tons of crude per day or at the rate of 200,000 tons per year. The product is very heavy but is said to contain a high proportion of fuel oil. The operations employ 800 men, among whom are several American drillers. At Gemsah, opposite the entrance of the Gulf of Suez, the Anglo-Egyptian oil fields company has sunk 22 wells, six of which were productive, while only three were in operation at the end of 1922. One of these wells, drilled in 1914, was a gusher and flowed 4,000 tons the first day, but its flow has constantly decreased until its production has been reduced to about 10 tons a day. The well proved to be one of the most disappointing developments in oil encountered in Egypt as it was no indication of the true nature of the oil field.

The Egyptian Government is prospecting for oil not far from Hurghada and has sunk 13 wells of Abou Dibra of very shallow depth and has found petroleum in five of them.

The Egyptian Government is confident that it possesses deposits of considerable importance.

Statistics of oil produced in the Hurghada Field, from the time oil was struck in October, 1914, to January 1, 1923, gives the total as 1,210,870 metric tons and on January 1, 1923, the average rate of production was 3,500 tons per week. Since the discovery of the Gemsah Field in 1908 it produced to January 1, 1923, 179,400 tons, but its production practically ceased, at that time being less than 60 tons per week.

No Free Seepage

A very recent communication from Alexandria, Egypt, states that those oil indications are practically all on the seashore with the further comment that no free oil seepage is known to exist in Egypt away from the sea.

Even at Hurghada, where there was stowed away in an underground natural reservoir over 1,000,000 tons of crude oil, at a distance of only a few hundred meters from the sea, not a single drop of this oil had previously come to the surface as a free oil seepage to suggest the existence of a hidden treasure below. Indeed, this valuable field was discovered on geological evidence alone. This remarkable coincidence appears to suggest the possibility that the proximity to the sea is an essential condition in Egypt to oil finding its way as such to the surface and that this may account for the absence of any free oil seepage in inland localities."

The total estimated net production of crude oil, after separation of water of the Anglo-Egyptian Oil Fields, Ltd., in 1923 was 150,423 tons. This is the second year in succession that the company has had a reduction in the tonnage of oil secured, the reduction in 1922 being 11,918 tons and in 1923, 18,890 tons. For the first five months of the present year the production has been almost identical with the average production of the corresponding period in 1923. It is said that all of the new wells put down in 1924 on the Hurghada Field have given production.

OIL IS BIG ASSET OF DUTCH EAST INDIES

(Continued from Page 138)

Figures for subsequent years are not available.

Petroleum is also found in smaller quantities on other islands of the Netherlands East Indian Archipelago, notably in the Moluccas (Amboina and Ceram) whose production is given for:

	Metric tons		Metric tons
1916	3,263	1919	7,311
1917	2,256	1920	21,136
1918	3,574	1921	48,980

Total Production

The total petroleum production of the Netherlands East Indies between 1911-1922 is given as follows:

	Metric tons		Metric tons
1911	1,670,595	1917	1,792,610
1912	1,519,397	1918	1,764,152
1913	1,525,902	1919	2,048,623
1914	1,569,420	1920	2,261,377
1915	1,598,462	1921	2,359,343
1916	1,729,818	1922	2,381,924

Quality of the Oils

In conclusion, a word must be said about the characteristic qualities of the various oils found in the Netherlands East Indies. The Sumatra and especially the Borneo crudes are noted for the large percentage of aromatic hydrocarbons (benzine, toluene, xylene and naphthenes) which account for the high specific gravity of the benzine obtained from these crude oils. Nearly all Sumatra oils are extremely rich in light products and, generally speaking, contain little or no paraffin. The Borneo crudes vary a great deal in composition and it is no uncommon thing to find oils of an entirely different composition in the same field, e.g., at Sanga-Sanga, where at various depths the following oils are found:

1. Heavy crude, specific gravity, 0.95; contains no benzine, kerosene or paraffin.

2. Oils of a specific gravity of 0.85, which yield up to 15 per cent of benzine, more than 45 per cent of kerosene and from 8 to 13 per cent paraffin.

From the last named crude excellent lubricating oils can be obtained. The oil from the island of Tarakan (East Borneo) is well known as an excellent liquid fuel. It has a specific gravity of 0.95 and can be used as a fuel or as oil for Diesel motors after having undergone a very simple treatment by which it is cleared of impurities such as sand and water. The Java oils yield, as a rule, only very little benzine. Some of the crudes do not even contain kerosene, while others have a strong base of paraffin. Some are excellent raw materials for the manufacture of lubricating oils. As a rule the oils found in Java vary a great deal in composition.

Sumatra crudes contain about 20 per cent of aromatic hydrogenes, whilst the Borneo crudes contain more than 40 per cent. This peculiarity does not detract from their value but nevertheless makes the manufacture of kerosene more complicated. Although the quality of this kerosene is the same as that of the Pennsylvania product, it does not burn so well in an ordinary lamp fitted with a burner designed for the use of the American product. A slightly different shape is required, and as nearly all lamps on the market are fitted with burners constructed for the use of American kerosene, the product of the East Indies at one time suffered in popularity among the better classes of the population. In order to produce a kerosene which differs in no way from the best American brands, the Royal Dutch Co. has built a special factory at Balik-Papan, where the Borneo kerosene is treated according to the Edeleanu process with sulphur dioxide (SO_2) so as to extract the aromatic components. The kerosene thus produced is equal to the best produced and finds a ready market in Asia.

Up to Date Equipment

I mentioned the fact that the mineral oils of the Netherlands East Indies contain a large percentage of aromatic hydro-

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CHAPMAN CHROME NICKEL STEEL

At 1000° Fahr. before you specify your Steel Valves

A recently completed series of tests on Chapman Chrome Nickel Steel show the following results at 1000 degrees temperature:

Elastic Limit	51,000 lbs. per sq. in.
Tensile Strength	66,000 lbs. per sq. in.
Elongation in 2 in.	27%
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Chapman Chrome Nickel Steel is an alloy steel, of great cleanliness and homogeneity. It is produced in an electric steel furnace, and under the supervision of the Metallurgical Department.

As production of sound, clean steel is the first requisite, the second of same importance is the proper and thorough annealing of the castings. Chapman Chrome Nickel Steel is annealed in an electric annealing furnace, free from contaminating gases, and controlled precisely by an automatic control, together with a potentiometer system.

It has been stated that when consumers acquire a full appreciation of what clean, sound electric furnace steel means in terms of national efficiency, safety and economy, we shall see a more rapid growth than has yet been seen. Its usefulness to engineering and industry has just begun.

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VALVES

PRESCOTT MENOMINEE

PIPE LINE PUMPS

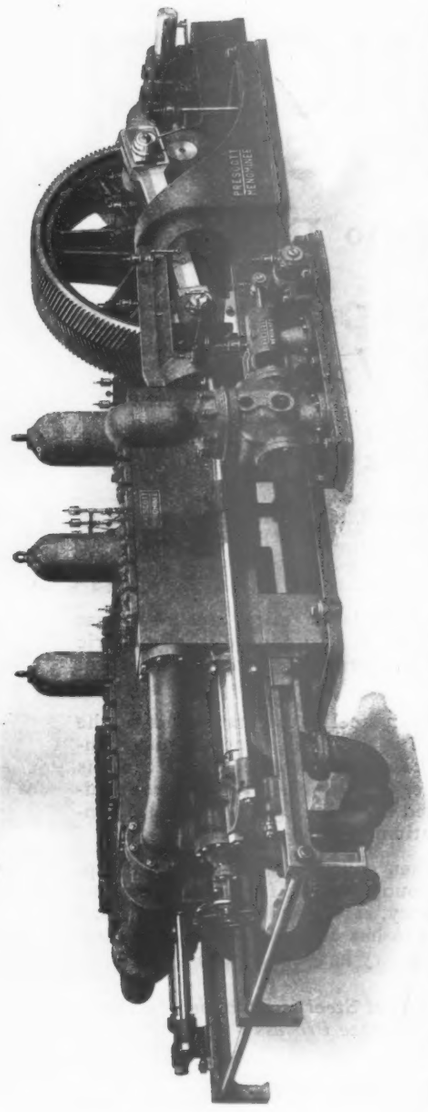


PHOTO SHOWS STANDARD 25,000 BBL. MAIN LINE PUMP AS RECENTLY FURNISHED THE HUMBLE PIPE LINE CO. HOUSTON, TEXAS

PRESCOTT MENOMINEE

FIELD PUMPS
4000 to 6000 BBLS.
DAILY CAPACITY
CARRIED IN STOCK
TULSA AND
FACTORY
IMMEDIATE
DELIVERY

THE PRESCOTT COMPANY, MENOMINEE, MICHIGAN, U.S.A.

carbons. Rather than detracting from their value, these by-products form a highly desirable component in the manufacture of explosives (trinitrotoluene or TNT) and dyestuffs. During the war, these constituents found their way largely to British factories of high explosives and thus contributed not a little to the success of the allied cause.

The petroleum industry of the Netherlands East Indies is highly and comprehensively organized. Besides the most up to date drilling and refining equipment, it is in possession of all the adjuncts required for the successful exploitation of the numerous by-products which characterize the crude oil found in the islands.

Balik Papan (Borneo) may boast of a paraffin factory which is considered as among the largest and best equipped paraffin works in the world. The same place possesses an up to date candle factory, manufacturing for export, while a similar factory producing almost solely for the local market is to be found at Tjepoe, Java.

VENEZUELA NOW LOOMING AS NEXT FIELD

(Continued from Page 144)

loading terminal at Los Piedras on the Paraguana Peninsula to be completed by January 1.

The Lago affiliated company, Lago Oil & Transport, is building a similar terminal on the Dutch Island of Aruba, in the Caribbean Sea, north of the Paraguana Peninsula.

The Caribbean Petroleum is adding lake tankers of 22,000-barrel carrying capacity to its fleet, and the Lago Oil & Transport has four lake tankers now in service and its fleet will be incresaed to nine by the first of January. Gulf will have a fleet in the Lake to handle a substantial production by the same date.

Other Drilling

Drilling by the following companies is under way:

Standard (New Jersey) at Palmarejo, three wells on the British Controlled Oilfields, Ltd., concessions, at Dabajura in Buchivacoa; at Esperanza in southwestern Perija on acreage of the Maracaibo Oil Exploration, at Vale de Coro in the district of Colina, and at Maturin in the State of Monagas.

Beacon-Sun (Beacon Oil, Boston, Sun Oil Co., Philadelphia) at Boscan and La Ceiba in the district of Sucre and at Petregosa in the State of Falcon.

New England Oil at Rio Pajui and Neogil in the district of Sucre.

Gulf at Mone in the district of Mara, at Punta Iguana, district of Perija, and at Menito, district of Sucre on a New England oil lease.

Northern Venezuelan Petroleum, two wells in the district of Acosta, State of Falcon and Caribbean Petroleum, two wells in the Tara Field in the district of Colon.

The following companies own extensive concessions in the Basin and maintain organizations in the field, but have not yet commenced drilling:

The Texas Co., Oronoco (Pure Oil) and Pantepec.

Land Holding Companies

Acreage of the Maracaibo Oil Exploration Co. is under drilling contract to the Gulf and the Standard (New Jersey) and that of Venezuelan Petroleum, to the Gulf. All of the acreage on the Creole Syndicate is under drilling contract to the Gulf. Venezuelan de Petroleo, owned in Venezuela, trades in concessions (sobrantes and reserves) exclusively.

Other Companies' Activities

Sinclair Consolidated has a party of engineers and geologists in Buchivacoa where they have an option on a drilling contract for acreage belonging to the British Controlled Oilfields, Ltd.

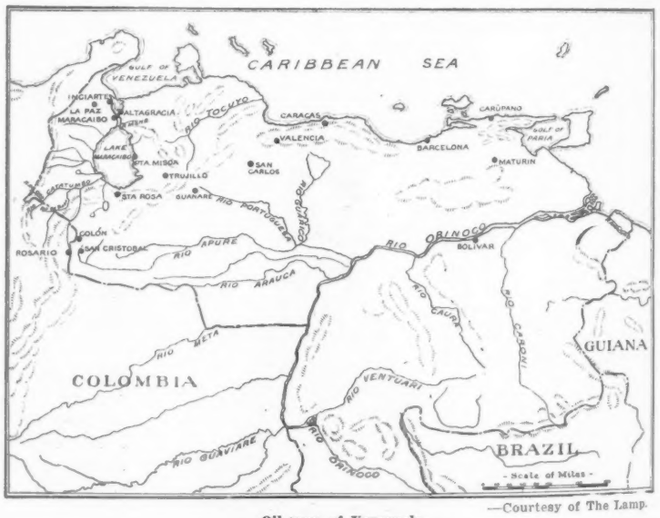
Standard of California and Atlantic Refining have observers in the field.

Carib Syndicate owns one-fourth interest in the stock of the Colon Development Co. (Royal Dutch), which is under option to The Texas Co., and General Asphalt receives one-eighth royalty from the Colon Development Co. and the Caribbean Petroleum Co.

The Standard of California has made a drilling contract with the Venezuelan Petroleum Co. by which it is to drill four wells on the two parcels of the latter company, west of the lake in the districts of Urdaneta and Perija.

Refinery

The Caribbean Petroleum Co. (Royal Dutch) operates a 2,000-bbl. refinery at San Lorenzo on Mene Grande crude. It also has a 20,000-bbl. plant at Curascao, Dutch West Indies. This company purchases the oil of the British Controlled Oilfields, Ltd., and the Venezuelan Oil Concessions, Ltd. The British Controlled Oilfields, Ltd., operates a small topping still at El Mene and the Lago is building a 1,000-bbl. topping plant at Saline in the La Rosa Field.



Oil map of Venezuela. —Courtesy of The Lamp.

INTERRELATION OF WORLD'S OIL FIELDS

(Continued from Page 144)

that other countries, particularly Venezuela, would have jumped into the breach and made up the difference. A large scale development in Venezuela would have occupied the tanker fleets. It is logical to assume that this development would have had a very material bearing on California production, possibly operating to restrict the opening of new fields and consequently the holding back of this supply as an underground reserve for future needs.

Competitive Development

Another way to look at the question may be illustrated by considering the effect of competitive development on the markets of the world. There is little doubt that had it not been for the fact

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PRACTICAL
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Another New Dunn Tool!

DUNN SAFETY Combination Rod and Tubing HOOK

The fact that it is a Dunn product insures that it embodies *safety and speed in operation* to an extraordinary degree—

BRIEFLY, HERE'S THE ANSWER

1. A combination rod and tubing hook—*one hook for all work.*
2. It is strong enough to carry the largest, longest string of tubing and then some.
3. It is light enough to handle the lightest string of rods easily and quickly.
4. It *handles* in a new and entirely different way.
5. The hook is hinged to the shank, and when in working position the two automatically lock together.
6. Automatically locks when in working position, *and cannot be released except by operator.*
7. Sudden jars, jerks, dropping, or rough usage, cannot open it.
8. The Safety Latch is completely protected from every outside influence.
9. Hook can be easily handled in either direction for receiving or releasing elevator bails.
10. Weight, 45 pounds. *Safe carring capacity, 45 TONS.*

Again-----Ithadtabedunn

Investigate this one before you order any more hooks
Naturally we remain a few jumps ahead of the field
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Reading the Palm

No Gypsy fortune teller is required to read the palm of the oil producer who uses

"Tex" plunger Working Barrels

Ever since the "Tex" appeared on the market it has vastly simplified oil well pumping. We can easily prove it. We have already proven it in a great many advertisements that have appeared in The Oil and Gas Journal.

We have shown instance after instance where the "Tex" was installed in wells that gave much trouble due to other working barrels before the "Tex" was tried. The wells had to be pulled frequently, some of them every day. Since the installation of the "Tex" many of the wells have not been pulled at all after months of continuous usage. One user reports that after about six months the "Tex" has saved 100 rod jobs.

No Cut Oil

In addition to the saving of pulling costs the "Tex" does not cut oil. Also, it pumps floating sand. Cups are eliminated. It packs itself. Reduces operating expense. Increases production. Why not try one in your WORST well?

It will pay you to get complete information concerning this remarkable working barrel.

Bradford Motor Works
Bradford, Pa.
Branch Factory & Warehouse, Tulsa, Okla.

that oil regions in Venezuela were held in large blocks by but a few companies, the country would have been far ahead of its present production status. To some extent, this situation has changed. Right now there is active competitive drilling in the La Rosa Field. In a short time the indications are that several companies will be drawing on the same reservoir. The wells are apparently big and under competitive conditions a production of 100,000 bbls., 200,000 bbls. or more a day—assuming that the various interests now drilling strike the same deposit—might easily be developed. It is axiomatic that given the oil and the competition the petroleum industry will solve the problems of transportation. If Venezuela comes along with some 200,000 bbls. a day of new production sometime about the middle or the latter part of next year, its oil will have no small bearing on productive developments in this country and in other countries.

GREAT EXPANSION IN FOREIGN OIL MARKETS

(Continued from Page 78-A)

months of 1924 being 68,282,994 gallons against 145,985,132 gallons for the corresponding period of 1923. Crude oil exports to Canada and Mexico are shown in the following table:

Crude Oil Exports to Canada and Mexico
(Figures in Gallons)

	Canada	Mexico
9 months 1924	363,230,510	68,282,994
9 months 1923	266,464,555	145,985,132
Year 1923	370,695,209	204,597,795
Year 1922	344,151,775	1,286,116
Year 1913	124,720,045	16,138,930

Where Exports Go

The most important branch of our export trade is in refined products, and authorities believe that particularly heavy increased demand will be noted in 1925 in gasoline and lubricating oils, while a revival of shipping will mean a far greater movement to foreign countries of fuel oil.

The United Kingdom is the heaviest purchaser of American refined products. Our trade with the United Kingdom is running 32.2 per cent of the total exports of gasoline, 14.5 per cent of total illuminating oil exports, 11.7 per cent of total exports of gas and fuel oil and 25.3 per cent of total exports of lubricating oils. In 1923 gasoline exports to the United Kingdom jumped from 15.8 per cent of the total export movement to 28.4 per cent.

France is the second best customer for gasoline and is also the second best for lubricating oils. France is now accounting for 22.5 per cent of the total gasoline exports and 18.4 per cent of the total exports of lubricating oils.

China leads all countries in the quantity of illuminating oil taken from the United States, exports to China amounting to 16.3 per cent of the total movement.

Japan is a large customer of the United States as regards gas and fuel oil, taking practically as much as the United Kingdom or actually 11.5 per cent of the total. Heavy shipments of gas and fuel are noted to Panama, this being largely bunker oil to supply vessels at the Panama Canal. Chile takes practically as much as Panama. Chile has always been a large consumer of American fuel oil, principally in connection with the nitrate industry in the South American countryy.

A comparison of the percentage of various refined products going to the more important countries is given in the accompanying table.

The accompanying table shows exports of gasoline, illuminating oil, gas and fuel oil and lubricating oils to principal foreign countries during the first nine months of 1924 and 1923 and during the years 1923, 1922, and 1913: All figures are from the Bureau of Foreign and Domestic Commerce.

ONCE PRODUCED HALF WORLD'S OIL OUTPUT

(Continued from Page 78-D)

ing the economical importance of Baku as oil producing land, took it from the Persians (1723), but after his death it fell to the Persians (1735.) During that year the production of oil amounted to about 2,000 tons and the oil wells were disposed of for exploitation by the Persian "khans" at a certain tax.

As in 1806 and 1813 Russia reconquered this land the oil trade there arrived at a turning point and it was only then organized on a real commercial basis. Against a lease rent of $60,000 per year the oil wells controlled by the Government were let out to concessionaires. In 1825 the Government took over again the administration of the oil wells as its monopoly in the hope of being able to considerably increase the revenues, which end, however, was not attained. On the contrary the latter soon fell back to somewhat more than half the lease-rent, so that the lease system was again restored and abolished only in 1872.

Rise and Fall in Production

Up to 1850 the yearly production had attained 4,500 tons, half being always exported to Persia. The price was in 1825 about $1.50 per bbl. and in 1847 about $1.90.

In 1870 the production amounted to 25,000 tons. After abolishment of the lease system which impeded the development, as the lease holders, whose contracts were only for four years, were, of course, not inclined to increase the output by large investments of capital for the benefit of their successors, the industry was developed on the basis that the oil lands of the Government were sold by public sales in parcels of 10 desiatin each, paid up in one sum plus a yearly tax on each desiatin, increasing within 24 years from 10 to 100 roubles. The Government in doing so obtained a price of nearly 1,500,000 roubles and the industry was now greatly developed. In 1873 the production amounted already to 70,000 tons and in 1875 to nearly 100,000 tons. At the same time the price sank at about 4 cents per bbl. From this time the development of the industry made rapid progress and the production in 1900 attained 72,000,000 bbls., or nearly 50 per cent of the world's production at that time. Today the total Russian production amounts to only about 4 per cent of the world's production.

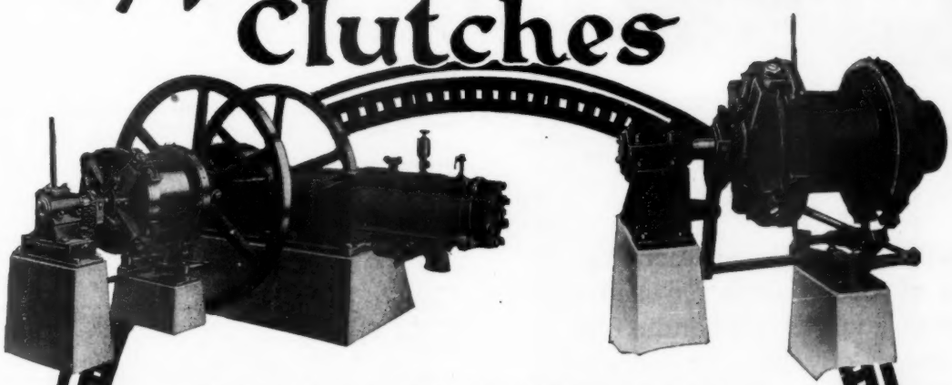
Russia's output was in 1901 85,000,000 bbls.; in the following years it decreased slowly to 63,000,000 bbls. in 1913 but rose to 73,000,000 bbls. in 1917. After the revolution and interior troubles the production decreased again amounting in 1920 to only 25,000,000 bbls., whereas now it reaches 43,000,000.

Working Process

The working process used in Baku is somewhat special and therefore of certain interest. Until 1913-14 drilling was done exclusively by the Russian rod system and as nearly all wells have to be bailed, a final diameter of from 10 to 14 inches has necessarily to be provided for. In order to reach this it was necessary to start drilling with tubes of considerably larger diameter, because shutting out the water required several casing strings. Thus, the dimensions already exceeded the maximum sizes of welded tubes obtainable and riveted tubes had to be employed. However, in order to obtain under such circumstances an efficient exclusion of water it was afterwards proceeded to fill up with cement the intermediate space between the casing strings. To carry out this operation it became necessary to leave sufficient space between the casing strings to allow introducing the small conduit for feeding cement down; so initial diameters of 42 and even 44 inches were reached.

It is obvious that under such circumstances the drilling equipment had to be a special one and that the repeated cementing work prolonged the time necessary to finish a well. To bring down a well 600 to 700 metres with 42-inch riveted tubes initial diameter and 12-inch hermetic tubes final diameter, whereby cementing had to be done twice, often took about three years' time. For the drilling work a very strongly built rig of more than 20 tons individual weight was used, having three different cable drums, and a walking beam driven on both sides.

Franklin valveless Gas Engines and Type "S" Reversible Clutches



Until you have used the FRANKLIN you really do not know how powerful and how economical a gas engine can be. FRANKLINS, veterans of years of hard service, are still daily on the job functioning as smoothly and efficiently as they did when first installed.

Fewer adjustments are necessary in the FRANKLIN; it is unusually economical in the use of lubricants; all bearings are adjustable and easily accessible.

Says one enthusiastic user " . . . it is the best one I have ever used; it holds perfectly and gives no trouble." That reputation was built upon performance. The type "S" Clutch is reliable, self-oiling, strongly made and was especially constructed for oil field use.

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New Martinsville Supply Company, New Martinsville, W. Va.

Transit Pumps on the Panama

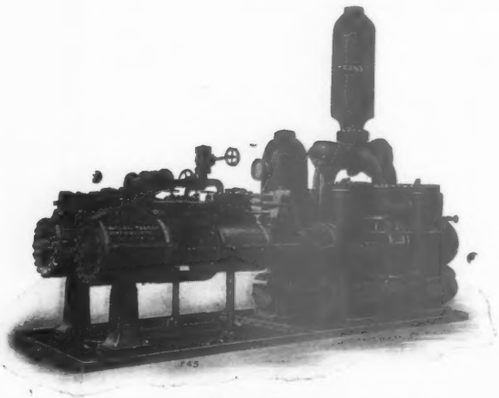


Fig. 743
14 and 20x12x18" Compound Duplex Plunger Pump for working pressures up to 300 lbs. Capacity 2200 bbls. per hour.

Back in 1914, the Government ordered four of these pumps for use on the Panama Canal. They handle fuel oil from cargo oil ships to storage tanks, from storage tanks to steamers and motorships, and from storage tanks to tanks which supply shops and power houses.

This year two more units were necessary. Nine years of satisfactory performance of the first four units was the principal reason for specifying TRANSIT PUMPS for the last two.

Send for our Bulletin 104-A
"Outside Center Packed Pumps"

NATIONAL TRANSIT PUMP & MACHINE CO.
OIL CITY, PA.

District Offices: New York Philadelphia Pittsburgh Cleveland Tulsa Houston Denver

FOREIGN AUTOMOBILE FIELD IS EXPANDING

(Continued from Page 76)

Think of almost $30 a quarter tax on a small car; $35 every three months on a medium priced car, and you will better understand why the English industry is held back. The English makers produce There are 12,000 dealers in Great about 70,000 cars and trucks a year. Britain.

We are cooperating with English motor car manufacturers in taxation and other matters. The English agree with us that they sell many things in this country, including some motor cars and quite expect that we should sell more of our products in England, including American motor cars.

Germany Needs Cars

Germany wants our cars and wants them badly. They have 1,900 dealers, of which 150 handle American cars. Their dealer organization is strong and doing effective work.

American cars have been going into Germany under a permit and are in great demand. They have some severe handicaps on the use of cars such as lack of parking space, high registration fees and the law which prevents more than three cars being stored in one garage. Public garages have to have a separate compartment for each car.

It is figured that at least 90 per cent of all cars in Germany are operated by chauffeurs, the owner-driver being a new element and woman driver almost neglible.

Hungary, Austria and Italy offer very little prospect for motor cars now because of the low rate of their money and the fact that Italy is a pretty good producer of cars.

Although a few of the German makers are doing well, the majority have been finding it hard to make sales at a profit. The interchangeability of parts is the greatest talking point for cars in Germany and there is need for good educational films relative to car making and car use. At present there is only one car in Germany for every 400 people.

Difficulties in France

Because of the general conditions in exchange it has been quite difficult for Americans to sell cars in France. There is a duty of 45 per cent and on this we have to add a 10 per cent luxury tax and a 1.3 turnover tax.

Gasoline is high, and exchange has been running 18 to 20 francs to the dollar, so that one of our good American cars sell at 100,000 francs, which in normal times would mean $20,000.

Citroen and Renault are the biggest manufacturers; Citroen especially being a progressive of the American type, conducting his factory on American methods and working in close contact with American supplies of economical production machinery. The day I spent with him at the factory he turned out 227 cars, with his normal production running about 200 cars a day.

Belgium is a good field, more than 7,000 American cars going into that country last year.

Just now there is a duty of 20 per cent on the value but this later will be changed to weight, although there is a good deal of opposition to it. Registration fees are about $40 a year for small cars. There are more than 80,000 cars in Belgium. The American product is well liked and the dealers handling American cars are very generally of an energetic type who appreciate the products they are offering.

American Cars Liked

In Holland, where there are about 30,000 cars, we find the use of American cars very much on the increase. Automobile buses have been coming in very fast. Increase of car imports in the first six months this year was more than 40 per cent, which covered about 8,200 cars.

There are more than 112 makes being sold in Holland, coming from various countries of the world.

Switzerland is a fine, compact, prosperous little country. It does business with everyone and conducts its affairs on a basis that offers a fine example for other countries. It has had compulsory liability insurance on motor cars in operation for two years and it has worked out fairly well, the insurance being done with local companies and not by the State. All other countries in Europe object to compulsory insurance of this kind on the ground that it makes for increased accidents and property damage, as people are careless when they are relieved of responsibility.

In general it may be stated that selling motor cars in Europe is not unlike selling motor cars in this country. You must have a meritorious product at a proper price. There are many fundamental handicaps over there that we will have to face and try to cure and this will be one of the activities of the National Automobile Chamber of Commerce during the next few years.

American cars are well liked wherever they are used and people generally throughout the world will buy them if they can be bought and used on a reasonable basis.

H. N. Greis Resigns; Sir James T. Currie President of Lago

NEW YORK, Dec. 15.—Sir James T. Currie has been elected president of the Lago Petroleum Corp., to succeed Henry N. Greis, resigned. William Boyd, of Houlder, Weir & Boyd, has been elected a director and member of the executive committee to succeed James E. Whitney, resigned. Houlder, Weir & Boyd are the American agents of Andrew Weir & Co., of which Lord Inverforth is the head. Sir James T. Currie is executive director of the British Mexican Petroleum Corp., Ltd.

Lord Inverforth has been elected president of the Lago Oil & Transport, which is owned jointly by British Mexican Petroleum and Lago Petroleum. British Mexican owns about 30 per cent of Lago Petroleum. There are about 2,750,000 shares of Lago Petroleum outstanding of an authorized issue of 4,000,000 shares.

Lago Petroleum Corp. began shipments from the properties in the La Rosa area on the eastern side of Lake Maracaibo, Venezuela, to its ocean terminal on the island of Aruba on October 29, last. The company has shipped to date about 250,000 bbls. of oil, all of which have been redelivered to ocean tankers at Aruba. With additional tanker space available on December 9, Lago, it is said, will ship regularly 10,000 bbls. of oil a day.

The company is reported to have now nearing completion four additional lake tankers of a capacity of 25,000 bbls. each, to be delivered in 90 days, after which date the company wil be able to ship 25,000 bbls of oil a day, its contract requirements. These lake tankers will transport the oil from the producing fields of Aruba. The present plan of the company is to order four additional tankers, delivered over next year. It is hoped by the end of next year the schedule of shipments can be increased to about 50,000 bbls. a day.

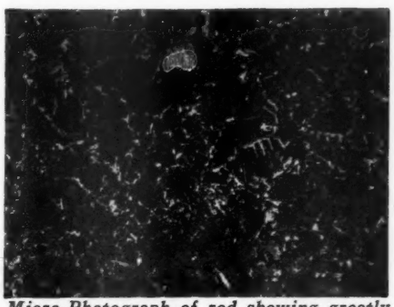
Officers of Lago Petroleum now are Sir James T. Currie, president; William Boyd, vice president; A. A. Holland, vice president and general manager; Maxwell Stevenson, secretary and treasurer. The directors are: Lord Inverforth, Sir James T. Currie, Frederick W. Baker, director of the National Mining Corp., Ltd., London; Thomas Ford, chairman, and John Hatfield, treasurer of Tankers, Ltd., controlled by Anglo-Persian Oil Co.; J. T. Munds, F. A. Drury, George F. Napben and Michael M. Cunniff.

ASSOCIATE TECHNOLOGIST POST

The United States Civil Service Commission announces that receipt of applications for associate technologist (petroleum production) will close January 20, 1925. The examination is to fill a vacancy in the Bureau of Mines for duty at Dallas, Tex., and vacancies in positions requiring similar qualifications, at an entrance salary of $3,000 a year. Advancement in pay may be made without change in assignment up to $3,600 a year.

The Same OUTSIDE — *but far different* INSIDE

THE NEW JONES FORGED END RODS



Micro-Photograph of rod showing greatly enlarged grain structure of Sucker Rod Steel when it has been heated to a forging temperature and cooled in air.

Photograph showing the same piece of steel after being normalized. Note the dense grain structure, which results in greatly increased strength.

THE Forged ends on the new JONES RODS are unlike any other forged end rod, because, first: the great care used in the forging operation to assure an even flow of metal—and, second, the heat normalizing treatment, which tends to restore the metal to its original structure.

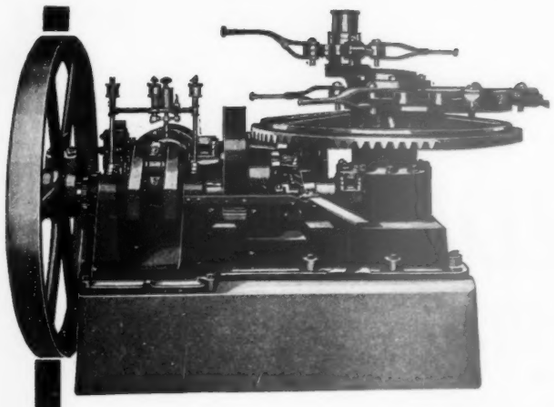
There are no defects in JONES Forged End Rods, made of special analysis steel, with the perfected forged ends, they are today the finest, strongest sucker rods made.

Try them and prove our claims

A booklet, the "Inside Story," is ready for you—may we mail you a copy?

The S. M. JONES Co. Toledo, Ohio.

Mid-Continent Office—601 Wright Bldg., Tulsa, Okla.



Learn for Yourself About This Power

If you need compact, strong dependable power, you owe it to yourself to investigate this latest Pattin combination.

Pattin 4-cycle Gas Engine geared direct to single eccentric and disc pumping power. Equivalent to double eccentric. Makes possible perfect balancing of wells without swings. For wood or concrete foundation. Perfectly concentrated power, eliminating belts, and doing away with the large power house.

Made in 8 H. P., 12 H. P., 15 H. P., and 20 H. P. sizes.

Write us about this.

THE PATTIN BROS. CO.
Marietta, Ohio
Branch Offices and Warehouses:
Tulsa, Okla.; Wichita Falls, Texas
Carried in stock by Frick & Lindsay Co. in Kentucky

PATTIN POWER

FUNCTION OF PETROLEUM GEOLOGIST; IMPROVED TECHNIQUE IN OIL FINDING

By E. De Golyer
Amerada Petroleum Corp.
Before American Petroleum Institute, Fort Worth, Tex.

The geologist is popularly supposed to "find oil." That sorrowful phrase, "a geologist said there was oil," has come to be a commonplace ending for the many sad accounts of the drilling of dry holes and in such tragedies, by implication, at least, the geologist is usually the villian. As a matter of truth, "finding oil" is the business of an entire industry and the work of a geologist, important as it may be, is not absolutely essential nor does the geologist have any open sesame which will enable him to be uniformly and consistently successful. If he did, oil would be worth even less than it is now. The oil market would be a complete wreck.

That his work is not absolutely essential is apparent to anyone. The oil industry ran on for 50 years without any marked assistance from the geologist; many important companies have achieved success without his aid, and millions of barrels of oil have been found and produced without any geologic assistance whatsoever. The same adverse criticism, however, might be leveled at any of the professions. You might win a law suit without the aid of a lawyer; one might recover from a serious illness without a doctor; and important and serviceable works could be planned and constructed without an engineer. The function of any of these professional men is to increase the chance of success and reduce the risk of failure. They are experts by reason of their studies and experience.

So it is with the geologist. He is an expert in rock formations and, if a petroleum geologist, in the relation of petroleum deposits to the rocks in which they are found. His function, in the oil industry, is to increase the chances for success and reduce the risks of failure. It is apparent since he has been generally tried in the oil industry over a period of years long enough to provide a fair test, and has been accepted by it, that he can profitably perform this function.

To get a more concrete expression, I should like to be able to express in a numerical ratio the chances for success on an ordinary hit-or-miss wildcat well and the chances for a wildcat well drilled on suitable geological structure. Unfortunately definite statistics are not available. I have been told that in the Dutch Indies the chances for an oil pool on an anticlinal structure are three in four. There is no area in the United States with such a high degree of probability. I have no statistics for the chances of success on a random hit-or-miss wildcat well though I suspect that it may be one in several hundred and that the chances of success on an anticlinal location in Oklahoma, for example, may not be better than one in twenty. Let us assume for the sake of argument that the chance of a random location is say one in a hundred, and that the chance on an anticlinal location is say one in fifty. It follows that the chance of success under these ratios, which I believe to be understatements of real conditions, will be doubled by taking the anticlinal location and that you can profitably engage a geologist to find it for you. The further moral is that if one is in a continuing business and drills a number of wells over many years, he should get a definite return according to the law of averages, but if one is only prepared to drill one or two wells, he is indulging in rather a hazardous speculation for high stakes and has no just cause for complaint if he fails.

As to the future of the geologist, I have no desire to repeat, and you probably are even less inclined to hear the constantly recurring warning as to the exhaustion at some future date of our petroleum resources. Our petroleum resources, whatever they may have been in the beginning and whatever they may be now, are a gradually diminishing asset. If one takes any given area, it is evident the first hundred pools to be found will be those which best express themselves at the surface either by oil or gas seepages, by geologic structure, or by such other indication as most appeals to the prospector. As the number of discovered pools increases, the number yet to be discovered decreases. It follows along these lines of argument that it will become increasingly difficult in the future to find new oil fields and that, unless the geologist can improve his technique, the time will come when he can be of little or no further assistance to the prospector and that the industry will be reduced to pure chance in the discovery of new pools.

During the ten or a dozen years he has been activity engaged in the industry, the geologist has improved to a remarkable degree his method of attacking the prospecting problem. If we take the Mid-Continent as a type area, we find in the beginning the geologist's ability to map an anticline was confined generally to anticlines where the dip of the rocks could be seen by the eye and perhaps even measured with a pocket clinometer. The next step was to replace this crude method by running out and determining the elevations of rock outcrops by plane table. This method, still of value today, was shortly supplemented by sub-surface studies. The elevations of certain recognizable beds was determined from well logs structure, contour maps were made and as a result oil pools were found which had not been indicated by other methods. One of the earliest successful wells drilled by the company with which I am connected in Oklahoma, a well which resulted in the development of a prolific Wilcox pool, was located on a dome, the only evidence for which was the dip away in all directions from a central point of a certain oil sand as shown in the logs of nearby dry holes. The well was located solely on dry hole information. Today hundreds of thousands of dollars are being spent in digging for geologic structures with core drills in areas where rocks are not exposed to the surface.

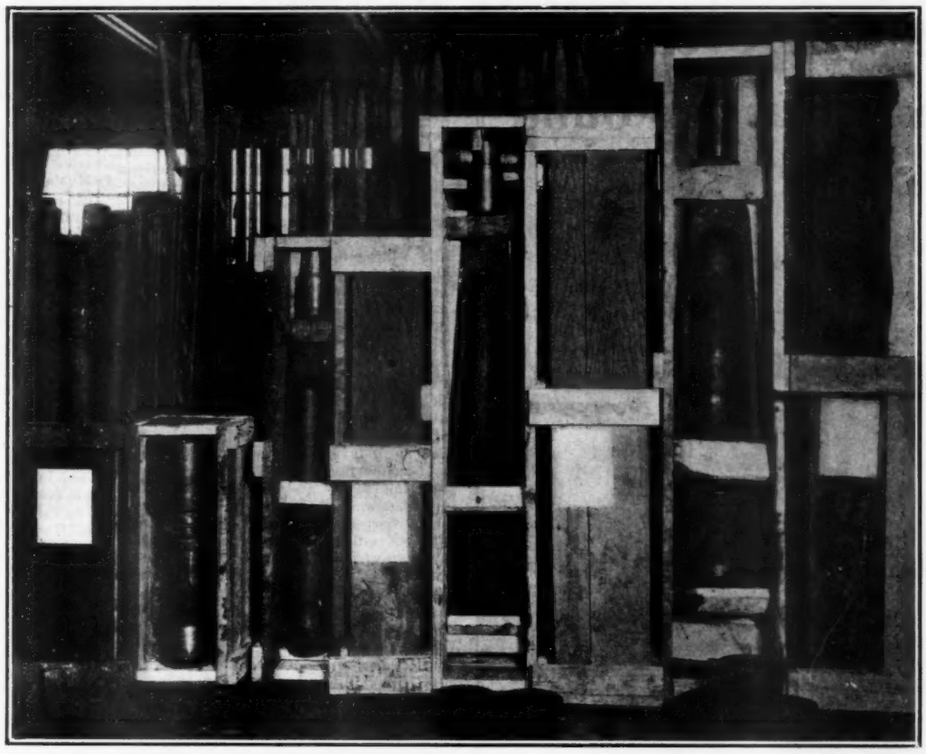
It is only by constant refinement and improvement in technique the geologist is able to be of use in the industry.

The limit of possible refinement and use of new methods has by no means been reached. Under any condition research for further improvements and new methods will be continued by geologists themselves and by individual companies. There are certain researches, however, which should be carried forward by the industry as a whole. Any single one of us may think the problem of the origin of oil for example is a matter of scientific or academic interest and of no particular practical importance but the problem is a broad one—broad and fundamental enough to have an attempt at solution sponsored by the entire industry—and its solution could easily be of inestimable benefit to the industry. There are other problems of similar importance.

Certain reasearches now being carried forward by individual companies might be more profitably and more successfully handled by the industry as a whole. During the past few years geophysical methods have been brought from Europe and tried out in the Gulf Coast with remarkable success. These methods, the modern scientific representatives of the peach tree or hazel twig and divining rod, or the wigglestick, do not pretend to indicate the existence of oil pools but they do indicate in certain instances the existence of salt domes, that peculiar type of geologic structure with which oil pools are generally associated on the Gulf Coast. By means of such delicate physical measurements as that of the variation from place to place of the force of gravity or variations in the speed of transmission of artificially induced earth tremors, it has

(Continued on Page 158)

HINDERLITER TOOLS



A recent shipment to Shanghai, China, consigned to one of the largest operators in the Orient. This particular order included, with other tools, 15½, 12½ and 10 inch Hinderliter Eccentric Combination Sockets. Another recent foreign shipment to Colombia, S. A., also included patented tools by Hinderliter.

Sail the high seas to bring modern methods to the Oil Fields of the World

New developments, incorporated in Hinderliter Drilling and Fishing Tools, are rapidly winning favor, among owners and operators, from Oklahoma all the way to Shanghai, China, and Colombia, S. A.

The ingenuity of Hinderliter patented fishing tools and the simplicity and sturdiness which characterizes all Hinderliter Tools, have won for them the confidence of users who recognize the advantage of employing the best in modern equipment. Hinderliter Tools have yet to betray this confidence, which is a source of pride to their manufacturers.

Some of the newer patented fishing and drilling tools manufactured by Hinderliter

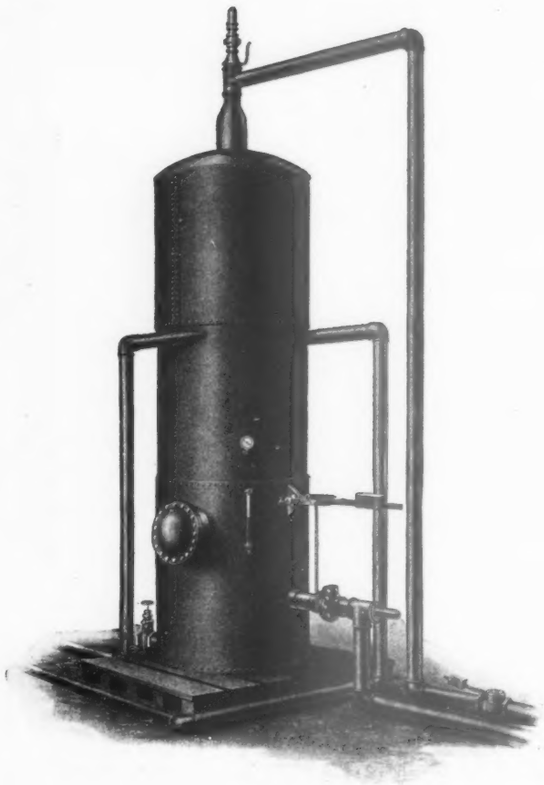
- Eccentric Combination Socket
- Mildren Tubing Supports
- Hollow Casing Spear
- Two-in-One Tool Hook
- Casing Collar Ripper
- Swivel Top Bailers
- Joint Breaker
- Casing Tool Coupler
- Bell Socket Spear
- Slip Ring Socket
- Kick Off Tool
- Wire Rope Cutting Knife
- Jar Up and Jar Down Casing Ripper

HINDERLITER TOOL COMPANY
TULSA, OKLAHOMA
"The Biggest Little Tool Company in the Oil Country"
Branches in Principal Oil Fields

301

HINDERLITER

Trumble Gas Traps are Found Wherever Oil and Gas Is Found



For many years Trumble Oil and Gas Separators have been used all over the world and a saving of both oil and gas has been effected by their use. A saving of oil is effected by holding the lighter constituents in the oil while the separation is taking place, under pressure. The gas when separated from the oil is confined to pipe lines where it may be carried to any place where it may be desired.

Oil and gas conservation is an important item in the operating fields today and may be the difference between profit and loss in operating a small field.

TRUMBLE GAS TRAP COMPANY

804 Higgins Building — William C. Rae
LOS ANGELES, CAL. — SALES MANAGER

Eastern Representative:
C. F. CAMP
14 East Seventh Street (P. O. Box 289)
TULSA, OKLAHOMA

Sales and Service Of Domestic Burners Discussed by Capen

By Wallace C. Capen

Home Appliance Corp.
Before Group Session, Heating the Home With Oil, American Petroleum Institute, Fort Worth, Tex.

We have one motor vehicle for every seven persons, one telephone for every seven persons, one heated home out of every three, one heated owned home out of every one and one-half. The American public will accept a device that will perform a genuine service and I know of no field of activity at the present time where the public mind is so receptive and willing to listen as to the merits of the automatic oil burner. This does not mean, necessarily, for homes only. The automatic oil burner is getting into other fields, such as churches, apartment houses, picture shows, oven-enamelling plants, bake ovens, etc., etc.

I stated before that the American public was in a receptive mind to find out all they could about oil burners. On account of this interest and demand, every American inventive mind in this country and a few inventive "nuts" are working overtime to try and supply this demand. I understand at the present time there is somewhere in the neighborhood of 1,800 patents, either in applications or having been granted in the United States Patent Office. Of course, a condition of this kind naturally upsets somewhat the industry but in the end the public will be the final judge as to the merit of our product. The burners that perform the most successful service, are those that are going to succeed and nobody can stop them.

At the present time, at least in selling a domestic oil burner, operating costs and mechanical details should be avoided. The average man is not interested in pumps, jahooskies, whimmididdles and the various mechanical hookups. Every now and then you will run into a chap that is mechanically inclined, or an engineer that is interested in mechanical details. Where possible, men of this type, if they are deeply interested, should be turned over to your engineering department. The average salesman is not a mechanical or combustion engineer and should be very cautious about getting into discussions of this kind. The average owner wants to know the service that an oil burner will perform for him. It is easy to show him the drudgery it will eliminate, the cleanliness, and also point out to him an automatic oil burner how, through even temperature, it improves the health of himself and his family. The average prospect is not interested in mechanics any more than if I went into a drug store to purchase castor oil, can you imagine how pleased I would be to have some clerk start to deliver an oration to me on the history of the castor bean. Likewise, operating costs are very difficult things to deal with. You can take and operate a burner one winter at a certain figure and the next winter it will be more severe and naturally your operating costs will go up.

Another point, in heating a home with coal the average temperature is about 61 degrees. Heating the home with an automatic burner you will have an average temperature of 70 degrees, and naturally, everything being equal, on that basis alone, the fact you are getting more even, healthful heat, will cost you more.

Turning from direct sales to after sales and repeat orders—in reality after a firm has started, its best salesman is its service department.

An oil burner in the first place, like almost all mechanical devices, like an automobile, typewriter, adding machine, is not worth 5 cents without service. For that reason I do not believe for some time to come that an oil burner for heating purposes can be sold by mail.

In the first place for the same reason that underwriters do not put their label on an oil burner. They list it as standard. We can make an oil burner and provide it with all the safety devices possible, and if it is not installed correctly it is a menace. A good oil burner can be ruined by improper installation and if it is installed properly can be ruined through bad service.

CONSTANTIN PROPERTY IS SOLD FOR $858,000

The properties of the Constantin Refining Co. in Oklahoma were sold at public auction in Tulsa Monday morning for $858,000 by W. W. Owen of Muskogee, Okla., special master of the Federal District Court. The purchaser is the Bond Holders' Protective Association composed of H. C. Rorick, of Toledo, Ohio; the Spitzer-Rorick Trust & Savings Co., of Toledo, Ohio; W. H. Lippincott, of Philadelphia, Pa.; and Paul Prudden, of Toledo, representing Prudden & Co., holders of mortgages against the Constantin Refining Co. for $4,000,000.

The plans of the purchasers in regard to the two refineries which constitute the bulk of the Constantin properties have not been formulated pending the formal approval of the sale. It is expected that P. M. Malloy, who has been receiver of the company, will continue to represent the new owners.

The Constantin Refining Co. was organized in 1913 by Capt. E. Constantin and his two sons, Jules and Eugene, and was capitalized at $75,000. Refineries were built at West Tulsa and at Devol, Okla., and the company was highly successful until the period of deflation following the war. It was valued at $8,000,000 during the war, but went into the hands of receivers in March of 1923.

A tentative bid on the 1,084 steel tanks belonging to the company was made by Harry E. Brigham, president of the North American Tank Car Co. In addition to the refineries and tank cars, the properties offered for sale included a pipe line and producing acreage making about 200 bbls. daily.

KENTUCKY'S PRODUCTION OF CRUDE PETROLEUM

By T. S. Scott

Secretary Kentucky Oil Men's Association

Production of crude petroleum in Kentucky during October, 1924, was as follows:

County—	Output
Allen	30,951.55
Barren	8,491.69
Bath	797.79
Cumberland	4,462.28
Elliott	884.82
Estill	45,669.16
Floyd	1,311.25
Hancock	2,218.00
Hopkins	1,118.72
Johnson	98,280.85
Knott	303.22
Lawrence	47,269.21
Lee	190,167.49
Magoffin	91,963.06
McCreary	220.76
Menifee	254.84
Monroe	1,944.90
Morgan	931.16
Ohio	9,550.78
Owsley	954.68
Powell	22,213.20
Russell	764.57
Simpson	922.20
Warren	46,369.57
Wayne	10,205.18
Wolfe	5,438.16

EUROPEAN IMPROVEMENT REPORTED BY OIL MAN

NEW YORK, Dec. 6.—Victor Ross, vice president of International Petroleum Co., Ltd., on his return from Europe expressed the opinion that the result of the elections both in Great Britain and the United States has proved an effective stimulus to business on the other side and that complete recovery of the pound sterling is in sight.

"What may to some extent retard trade expansion in Great Britain," said Mr. Ross, "is the substantial advance in commodity prices, particularly in foodstuffs and textiles. A higher level of prices for commodities will materially increase the difficulties of financing trade activity. Since the successful flotation of the German loan in London, sentiment on the continent has materially improved and the purchasing power of Europe is increasing every day."

KELLY TRADE MARK REG. KATS
THE TIRES WITH NINE LIVES

The final test of a tire is the service it gives

In designing and building the Kelly Kat, every requirement of a truck tire has been considered.

The notches in the sides and tread are so placed as to give the greatest possible amount of traction.

The width of the notches is calculated to take care of the flow of rubber displaced by the load. This gives the Kelly Kat exceptional resiliency.

The depth of the notches is made sufficient to allow the heat to penetrate equally to all parts of the tire during vulcanization. This insures smooth even wear.

The rubber compound used in the Kelly Kat is the one which twenty-five years experience and study have proved to be the toughest, most resilient and longest wearing.

As a result, Kelly Kats are able to show remarkable results in actual service. Nearly any truck owner who has used Kelly Kats will tell you that they give more traction, better cushioning and greater average mileage than any other type of heavy-duty truck tires he has ever used.

There are no Caterpillar tires but Kelly Kats

KELLY-SPRINGFIELD TIRE CO.
250 West 57th Street, New York

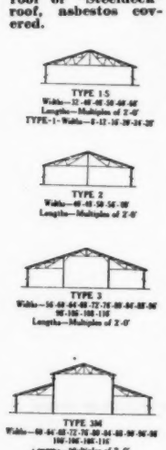
Kelly Kats always seem at home on a big oil truck. They are here shown on the rear wheels of a truck owned by the White Eagle Oil Refining Company.

TRUSCON
TRUSCON STEEL CO
STANDARD BUILDINGS

Sturdy Weathertight Walls
An Exclusive Truscon Feature

Substantial copper steel plates in walls assure rigidity and long life. ***(1) Truscon Interlocking Joint, drawn together by wedge bolts, absolutely shuts out wind and rain. (2) Not a single hole is punched through exposed surfaces.***

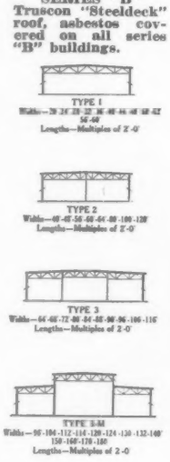
SERIES "A" Truscon Cooper Steel roof or "Steeldeck" roof, asbestos covered.



Steel studs in joints stiffen wall. All parts are securely connected together. Contrast this wall with corrugated iron siding, with its light sheets wired to frame, holes punched for connection and loose laps for weather to enter.

The walls are one of the many features of Truscon Standard Buildings which give the purchaser the greatest value for his money. You have complete choice of types, sizes and arrangements. Standardized units assure the economy of quantity production, quick erection and small working force. No trouble or delays. One contract covers complete building. If you want the best value in building, get our suggestions and estimates, furnished without obligation to you. Return coupon or write.

SERIES "B" Truscon "Steeldeck" roof, asbestos covered on all series "B" buildings.

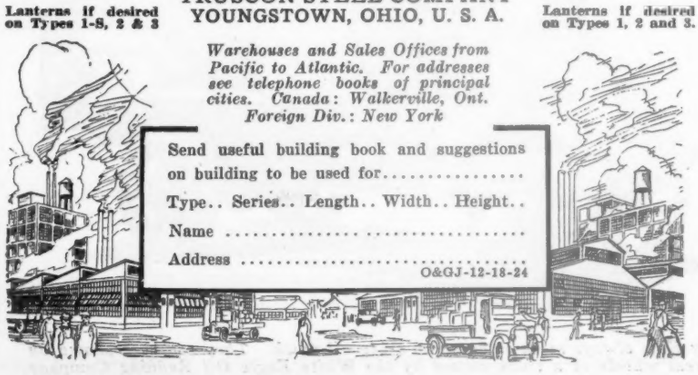


Lanterns if desired on Types 1-S, 2 & 3

Lanterns if desired on Types 1, 2 and 3.

TRUSCON STEEL COMPANY
YOUNGSTOWN, OHIO, U. S. A.

Warehouses and Sales Offices from Pacific to Atlantic. For addresses see telephone books of principal cities. Canada: Walkerville, Ont. Foreign Div.: New York



Send useful building book and suggestions on building to be used for.....
Type.. Series.. Length.. Width.. Height..
Name .....
Address .....
O&GJ-12-18-24

PROGRESS IN CEMENTING DEEP WELLS AS ACCOMPLISHED IN CALIFORNIA

By F. F. Hill
Union Oil Co. of California
Before Group Session, Improvement Institute, Fort Worth, Tex.

The first use of cement in oil well work was some time prior to 1900 when an unsuccessful attempt was made to plug off lower water by using sharp burlap sleeves filled with cement and lowered to the bottom on the sand line. Later, however, a great deal of plugging has been successfully done by dumping cement, or by lowering in cement in light tin containers then breaking them up with the drilling tools.

It became necessary to look for some means whereby a better bond could be made between the casing and the wall, and cover a greater surface than that afforded by the casing shoe, even though we made tapered shoes 5 feet or 6 feet in length. The thought came to me to use cement, but the big problem was to get it back of the casing. In order to undertake this task a self dumping bailer was designed by myself. After about 50 feet of cement had been placed in the bottom of the well the casing was lowered to the bottom having as much cement inside of the casing as outside.

When we were having such difficulty with the use of packers in cementing, W. B. Wigle, then employed by the Union Oil Co. of California at Lompoc devised the plan of using fluid for packing between the tubing and casing, through the use of a packing head on top of the casing, so that all fluid being pumped into the well would follow the course of least resistance, which naturally was up back of the casing, provided the space between the tubing and the casing was already full of fluid, and none allowed to escape, then no cement could get between the tubing and the casing unless there was a leak through the head or a hole in the casing, and this rarely occurred.

The tubing system was generally used up to 1911 when A. L. Perkins, then an employe of the Standard Oil Co., patented the Perkins process, providing for pumping cement through the casing and using two plugs.

Some operators, including the Union Oil Co. of California, for a number of years pumped straight through the casing using tank measured fluid for displacement.

Recently Erle P. Halliburton has built also a large cementing business, and has added a valuable improvement in a vacuum mixer, which insures a thorough mix and will handle up to 1,000 sacks if needed in time to get it pumped behind the casing before its initial set. Mr. burning machine should require no more attention than the gas range operated by the women folks in the kitchen. So the education of the customer in the proper use of the oil burning machine becomes a really important part of the problem of the oil burner manufacturer.

Any discussion would be incomplete without reference to the oil distributor, whether he be jobber or refiner, and this is not because the oil burner manufacturer has any difficulty in securing a grade of oil needed for the oil burning machine. In all of the larger communities a sufficient supply of satisfactory oil is readily secured. But the oil dealers, particularly some of the large refiners, will persist in spreading the doctrine of an eventual oil shortage. Why this old stuff should continue to be preached is beyond the limit of comprehension of the oil burner manufacturer. The prospective il shortage has been the skeleton in the closet for many years, while each year the supply has grown larger and larger. Yet otherwise really progressive men in the oil business not only fail to take steps to counteract this propaganda of the coal men, but actually join in spreading the "information."

Only so recently as the November meeting of the National Petroleum Marketers Association, one of the best known oil men repeated this same old story, that the oil supply would be exhausted in a very few years. How can the oil burner manufacturer and his distributor be expected to face prospective customers and make sales of oil burners when so able a man, generally speaking, indiscriminately circulates a report of an oil shortage. It is a rather interesting commentary that in one of the most reliable trade journals of the oil industry, the address was printed in full on one side of the page and the able editor made this interesting remark on the opposite side of the same page:

"There is at least one answer which can be known only to Omniscience, the estimated quantity of oil and gas recoverable from the unproved productive oil and gas lands held December 31, 1923.

"The best qualified men in the world have made repeated efforts to estimate the recoverable oil reserves only to find their estimates made ridiculously by actual development."

There is no one thing that the oil burner manufacturer faces today that is more serious a feature of his problem than convincing his prospective customers they will be able to get oil, and that these men who talk about the shortage have their noses so close to the grindstone they cannot grasp the larger vision.

But, after all, the problem of the oil burner manufacturer, while very real, is no more than is to be expected in the development of an industry that has come so quickly and is growing so rapidly. We welcome the cooperation of all who are engaged in the petroleum industry, and we assure you that oil burners are rapidly progressing to such mechanical perfection that the number of oil burner equipments to be installed will only be limited by the available oil supply and the number of dwelling houses.

FUNCTION OF GEOLOGIST OUTLINED AT INSTITUTE

(Continued from Page 154)

been possible to find, almost, if not quite, as many domes within a few months as had been discovered within the previous 15 years. Four domes have been discovered up to the present by this method, three by a single company. If a single company can thus profitably indulge in research after new methods, it seems certain beyond reasonable doubt that a sanely considered research program could be profitably backed by the industry as a whole.

I realize a program for attempting the improvement of oil finding methods may not commend itself at the present time to an industry already harrassed by overproduction, but a research is a matter of years rather than months and if results of research are to be available when they are most needed, work must be started in advance.

There is no rational method of guiding the exploration for and of oil deposits except on the basis of geologic evidence. The business of searching for oil is a highly speculative one and there are certain risks incident to it which cannot yet be eliminated. The business of the geologist is to reduce those risks to a minimum.

ORGANIZE MARKETING COMPANY

George P. Gleeson and M. J. Sutphin have organized a marketing company with headquarters at Fort Worth, Tex. Mr. Gleeson has been connected with marketing companies in the North Texas area for several years. Mr. Sutphin until December 1 was connected with the traffic department of the Fort Worth Chamber of Commerce. He has also had several years experience in the marketing of petroleum products. Offices of the new concern are located in the Fort Worth Club Building.

"Better Rotary Equipment"

Did You Know That—

LEBUS'

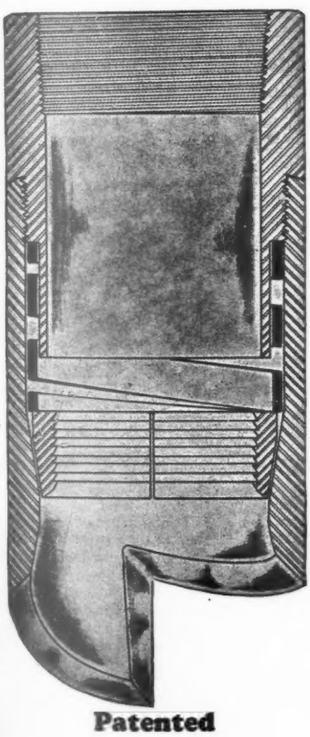
New Eureka Tongs

ARE equipped with quick change grips of every known size of drill pipe tool joint and casing within the diameter of the jaws.

That the control handle and spring latch go to make them the speediest and easiest tongs handled, ever made.

Hinge jaws, and four piece grips with teeth all around insure the greatest durability.

Patented



Patented

LEBUS'

Slipsocket Overshots

ARE equipped with slips for fishing for any sizes of plain pipe or tool joints that can enter into the bowl.

That the LeBus Overshot is the heaviest constructed and the nearest f o o l p r o o f Overshot made.

Carried by Supply Companies

LEBUS ROTARY TOOL WORKS

ELECTRA, TEXAS U. S. A.

WARREN CITY
TANKS
Any Size - Any Place - Any Purpose
FOR THIRTY YEARS THE SEAL OF SATISFACTION
ON TANKS AND REFINERIES

Rendering, year after year, the same painstaking service to the oil industry thruout America

The WARREN CITY TANK & BOILER Co
WARREN, OHIO

ACTIVITY IN GALICIA DATES FROM 1862

(Continued from Page 108)

of ¾-inch diameter and about 50 feet in length. The rotary system has, so the writer was informed, been tried out here but has proved unsuccessful due to the hardness and extreme dip of the formation. The string of tools employed is identical with the ordinary percussion tools of our own Mid-Continent fields (i.e., bit, auger-stem, jars, sinker bar and socket) except that their socket carries a connection for the steel poles instead of a cable and in most rigs the MacGarvey patent bit is used.

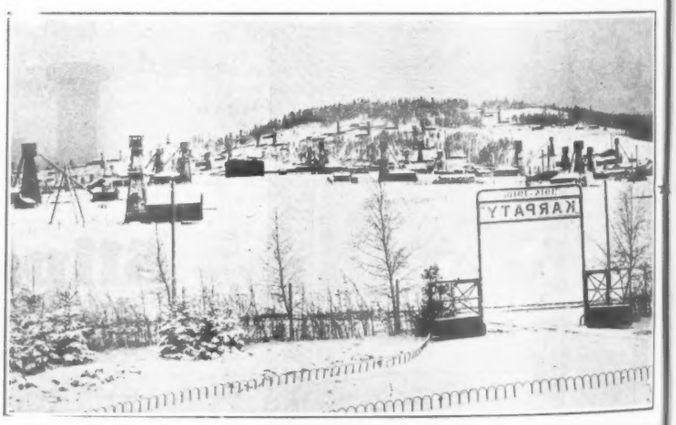
This bit is especially designed for the dual purpose of cutting through the tilted formations encountered in the locality and for underreaming. It is shaped like a huge cold chisel, except that it has a fin on one side running nearly its entire length. The outer edge of the fin is heavily ribbed, the rib ending in a smaller chisel-like cutting edge set in a plane intersecting the plane of the bit at right angles.

Manner of Pumping

The wells are spudded in with a 12-inch to 16-inch casing and ordinarily reach the sands with 6-inch to 8-inch pipe, through which they are pumped by bailing with a piston-like appliance lowered into the well on a cable. A tight seal is maintained between the piston and the inner surface of the casing by a broad rubber gasket under the tension of powerful compression springs. Suitable automatic valves permit the fluid in the well to readily pass upward through the bailer during its descent. As it starts up, the valves close, making the device a solid piston in the well, thus lifting to the surface dirty liquid which has passed above it. The oil, dirty greenish-brown in color, 0.85 to 0.86 specific gravity (33 degrees to 35 degrees Baume) contains much gas. In all but a few wells, located on the crest of the anticline or its folds, it is found badly emulsified and mixed with large proportions of salt water. During the banner years wells were brought in which produced as high as 250 zisterne (15,000 bbls.) daily. As indicated on the chart the production has been steadily falling until now the output of these wells ranges from 1 to 4 zisterne (approximately 60 to 250 bbls) per day.

One well in particular, which the writer studied in company with a field engineer of the Karpaty Geselschaft, may be taken as typical. From it 2½ zisterne per day are bailed through a 6-inch casing from a depth of 1,400 meters (4,600 feet). The oil is badly emulsified and is brought up by the bailer mixed with salt water, free and in the emulsion in the proportion of 10 of water to 1 of oil. That means that for every barrel of oil raised to the surface, 10 bbls. of water must be brought up. The bailer, which is handled by a steam winch, seen in the photograph, makes on the average of six runs per hour.

Boryslaw-Tustanowice.



View of a section of the Boryslaw Field taken from a window of the club house of the Karpaty Co.

The mixture of salt water and oil emulsion is first passed through a trap where the gas contained therein is collected. This gas is used for fuel and is burned under the field boilers and in the emulsion breaking plant described below. The mixture is then run by gravity to large open settling tanks where the free water settles out. The oil emulsion is then pumped

Club House of the Karpaty Co., at Boryslaw, where guests and visiting officials are furnished accommodations.

Complete-Continuous Service!

in Oil Field Supplies & Field Equipment!

Republic Supply Co. Stores dot the Mid-Continent and Coastal Fields.
There is One near Your Well.

Twenty-four-Hour Service!!!

Republic Iron & Steel Co.'s Tubing, Casing, Drive and Line Pipe.

Standard Seamless Tube Co.'s Seamless Upset Rotary Drill Pipe.

American Well & Prospecting Co.'s "Gumbo Buster" Rotary Equipment.

Jones' Acme Sucker Rods.

American Steel & Wire Co.'s and Broderick & Bascom's Wire Rope.

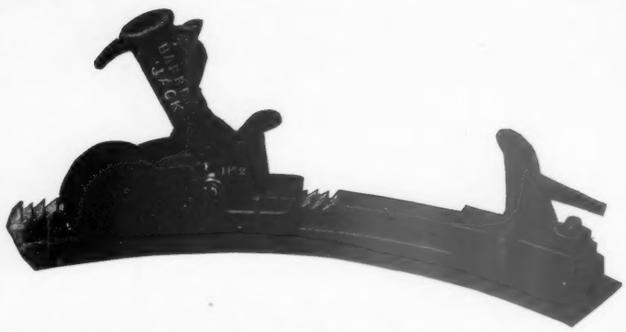
Hughes Tool Co.'s Hughes Rock Bits, Hughes Disc Bits and Hughes "Acme" Tool Joints.

Bovaird & Seyfang, and McNamar Oil Field Boilers.

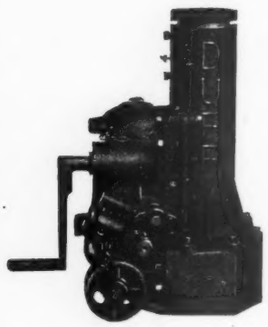
Jones' Acme Gas Engines.

REPUBLIC SUPPLY CO.

DUFF
Genuine Barrett
JACKS



The Genuine Barrett Oil Well Jacks are made in several sizes and capacities, for wrenching and unwrenching oil well tools. Above is shown the improved No. 2, with wide flanged rack and double-acting ratchet mechanism, most powerful circle jack made.



50- and 75-ton
High Speed Screw Jack

For the Heaviest Lifting 50 and 75 Tons Capacity

The powerful Duff High Speed Ball Bearing Screw Jacks have been adopted by America's leading railroads for raising locomotives. They are the simplest, most dependable, and repair-free jacks that can be used for deep well fishing and emergency lifting.

Capacities from
10 to 50 tons.

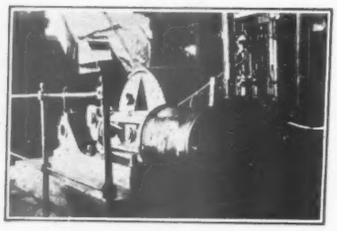
Duff Ball Bearing Screw Jacks

Especially suitable for rough outdoor usage, all working parts being of sturdy design, packed in grease, in leakproof case. Will give a lifetime of service, practically without attention or repairs. Loads can be lifted on the head or on the "toe." Made in sizes from 10 tons capacity up to 50 tons.

Ask for Catalog

The Duff Manufacturing Co.
Pittsburgh, Pa.

to a central emulsion breaking plant which is so located as to serve several wells. Here it is charged to ordinary portable field fire-tube boilers, gas fired and mounted on concrete foundations, in which it is heated under a pressure of six atmospheres to a temperature of 150 degreen Centigrade (302 degrees Fahrenheit.) When these conditions are reached the pressure in the boiler is released



Interior of the engine house. The steam winch handles the bailer. This installation is typical.

through a vapor line from the dome to a water cooled condenser. The water of emulsion passes off as steam together with some light benzine vapors which are liquefied in the above mentioned condenser.

About two zisterne per month, or approximately 120 bbls. of benzine are thus recovered in the particular emulsion breaking plant studied. This plant contains six boilers each equipped with a small dephlegmating tower in the vapor line to throw back any of the heavier oil that might be carried over mechanically. The water free crude is then ready for transportation to the refineries. Tank cars are generally employed as a means of of transportation to the refineries. Tank cars are generally employed as a means of transportation, although one of the larger concerns, owning leases in the Boryslaw Field, pipes its crude through a 4-inch line to a very modern refinery located at Drohobycz, a distance of seven kilometers or approximately 5 miles.

A close-up view of one of the derricks showing part of the engine house, and the enclosed cable runways to the derrick head.

General view of Boryslaw-Tustanowice.

CENTRAL WEST

(Continued from Page 54)

County, the East Ohio Gas Co. is starting a test on the northwest corner of the E. J. Cornell 82 acres, Section 12.

In Dover Township, Cuyahoga County, Hulse & Kuntz are drilling a second test on the southeast corner of the M. Griffin farm, Lot 34.

In Aid Township, Lawrence County, the Ohio Fuel Supply Co., is drilling a wildcat well on the George Carlyle 13 acres, Section 30.

Offside Operations

The E. H. Everett Co's test well on the John Patton farm, lot 4 Burlington Township, Licking County, is reported at 4,331 feet, where a slight showing of oil was encountered. No showing was found on top of middle of the sand supposed to be the Trenton. The well will bail a barrel of water and oil together in 5 hours, and is still drilling.

The gas companies are paying considerable attention to territory in Barlow Township, Washington County, and while the wells are not large gassers they help along materially to strengthen the supply in the trunk pipe line. An occasional good well is found. Kiggins and others' on the William Jones farm, fractional Section 713 of this township, showed a volume of 1,750,000 feet from the Maxon sand at 1,188 feet.

In the same township, McTaggerts' No. 1 in the northwest corner of the Clara Tullins 50 acres, fractional Section 713, showed 1,300,000 cubic feet from the same sand at 1,206 feet. One of the best of the late completions from this township was made by H. H. Goddard in No. 2 Mary A. Proctor farm, fractional Section 717, with a volume of 3,740,000 feet from the Maxon sand at 1,208 feet. The Pure Oil Co., drilled a 500,000 cubic foot gas well in No. 1 David F. Turner farm, Section 725, same township.

Indiana

Only one completion is reported from the Indiana fields and that is in the western part of the State, in Turman Township, Sullivan County, drilled by H. Stewart and others on the R. Abell farm, Section 14, with a production of eight bbls. from a depth of 825 feet.

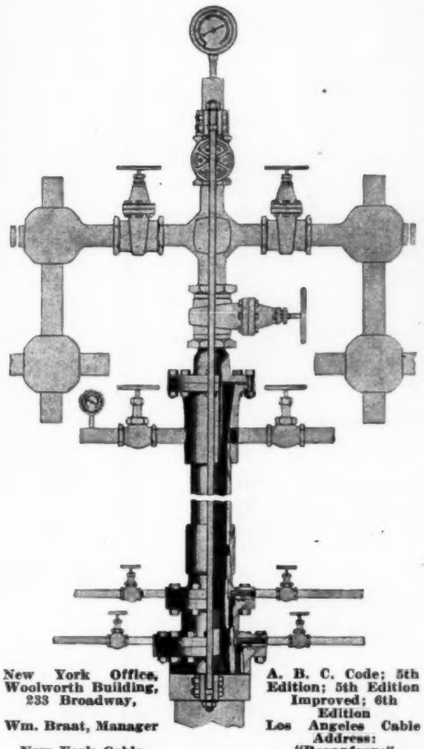
Illinois

Three completions are the best that the Illinois field could bring forth. In Casey Township, Clark County, R. G. Holmes and others' No. 3 in the northeast corner of the Charles Lowe farm, Section 25, pumped 15 bbls. from the stray sand at 1,410 feet. In Martinsville Township, same county, the Titus Oil Co's. No. 1 in the northwest corner of the W. D. Slater

havoc!

Prevent wild wells with the Regan Control Head! Here is the greatest PROTECTIVE insurance you can get! Extremely low in cost yet it gives you POSITIVE control regardless of what condition may arise. In the high-pressure fields of California where the reliable Regan has been installed, there has never been a single failure—NOT ONE! This ingenious device absolutely CONTROLS; it prevents leakage between strings; it prevents packing leakage; it controls gas while drilling; it permits quick capping without danger—it prevents wells from "blowing wild!" Full and complete information upon request. Write for it today.

REGAN CONTROL HEAD



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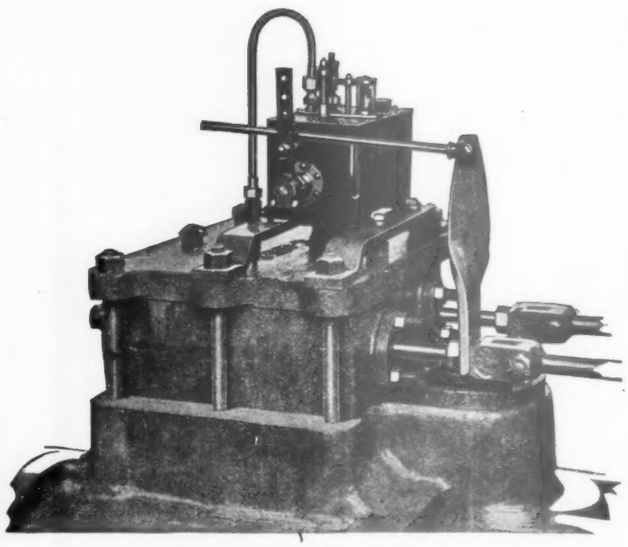

McCord Class "B" Lubricator on slush pump

Your slush pump is an equipment which you least prefer to be bothered with. McCord Lubricators are the best insurance against operating troubles.

Install a McCord Lubricator, fill it with oil and keep it filled, and forget your lubricating problems.

Ask for Bulletin 47

For Sale by NATIONAL SUPPLY CO., All Branches

McCord RADIATOR & MFG. CO

Lubricator Division

DETROIT, MICH

Manufacturers of McCord Dependable Lubricators, McCord and McKim Gaskets, McCord Radiators.

farm, section 30, pumped 25 bbls. from the stray sand at 1,425 feet.

In Dennison Township, Lawrence County, the Currie Oil Co.'s test on the northeast corner of the H. A. Seed farm, Section 21, proved a duster at 1,440 feet, which is the usual depth of the Kirkwood sand. In the same township, the Ohio Oil Co., abandoned old No. 18 on the T. P. Gillespie farm, Section 23. In Petty Township, same County, the Ohio Oil Co. and Andrews abandoned their Nos. 5 and 27, W. R. Crackel farm, Section 29. This farm was a wonderful producer in the early days.

AMERICAN COMPANIES EXPORTING OILS

(Continued from Page 124)

Oil State Ref. Co., Enid Okla.	1,800
Panhandle Ref. Co., Wichita Falls, Tex.	4,000
Peerless Oil & Ref. Co., Chanute, Kans.	3,500
Prairie Ref. Co., Dallas, Tex.	2,500
Pine Bluff Ref. Co., Pine Bluff, Ark.	1,500
Red River Ref. Co., Shreveport, La.	3,000
Richardson Ref. Co., Eldorado, Kans.	2,500
Roland Oil Co., Bristow, Okla.	1,500
Sapulpa Ref. Co., Sapulpa, Okla.	6,500
Shreveport Prod. & Ref. Co., Shreveport, La.	2,000
Star Ref. & Prod. Co., Fort Worth, Tex.	1,500
Sunshine State Oil & Ref. Co., Wichita Falls, Tex.	2,500
Sinclair Ref. Co., Cushing, Okla.	8,000
Sinclair Ref. Co., Coffeyville, Kans.	6,000
Sinclair Ref. Co., Muskogee, Okla.	1,000
Skelly Oil Co., Eldorado, Kans.	10,000
Sterling Oil & Ref. Co., Wichita, Kans.	5,000
Southern Oil Corp., Yale, Okla.	7,000
Texhoma Oil & Ref. Co., Wichita Falls, Tex.	5,000
Transcontinental Oil Co., Fort Worth, Tex.	3,000
Tidal Western Oil Corp., Burkburnett, Tex.	3,000
White Eagle Oil & Ref. Co., Wichita, Kans.	1,500
White Eagle Oil & Ref. Co., Augusta, Kans.	6,000
White Eagle Oil & Ref. Co., Fort Worth, Tex.	5,000
Yale Oil Corp., Yale, Okla.	1,500

Importers of Petroleum

The following lists importers of petroleum and petroleum products to United States from foreign countries, with their ports of imports:

Sinclair Ref. Co., Gulf and North Atlantic.
Mexican Pet. Co., Gulf and North Atlantic.
Atlantic Ref. Co., South and North Atlantic.
Beacon Oil Co., North Atlantic.
Gulf Ref. Co., Gulf and North Atlantic.
Standard Oil Co. of New Jersey, Gulf and North Atlantic.
Standard Oil Co. of New York, North Atlantic.
Standard Oil Co. of California, Pacific Coast ports.
Southern Pacific Co., Gulf and North Atlantic.
Sun Oil Co., North Atlantic.
Swiftsure Oil Co., Gulf ports.
The Texas Co., Gulf and North Atlantic.
Tidewater Oil Co., North Atlantic.
Vacuum Oil Co., North Atlantic.
Barber Asphalt Co., North Atlantic.
Interocean Oil Co., North Atlantic.
Magnolia Pet. Co., Gulf ports.
New England Oil Ref. Co., North Atlantic.
New Orleans Ref. Co., Gulf ports.
Asiatic Pet. Co., Gulf and North Atlantic.
Warner Quinlan Co., North Atlantic.
Galena-Signal Oil Co., Gulf ports.
Humble Oil & Ref. Co., Gulf ports.
Cities Service Ref. Co., Gulf and North Atlantic.
Union Oil Co. of California, Pacific Coast ports.

OIL PROSPECTS IN THE AFRICAN CONTINENT

(Continued from Page 120)

sandstones, instead of oil shales, can be found. According to the geological reports it would seem that from the bituminous seepings found all the way from the Manambolo region to the district of Sambarino, at the northern end of the island, one might be justified in supposing the existence of large oil areas which have not been touched by the erosion phenomena.

Egypt

Much need not be said concerning Egypt, as it is well known Egypt's production is already such as to place that country amongst the oil producing countries of the world.

Other African countries such as Abyssinia, British Somaliland, Union of South Africa, etc., have been variously mentioned as productive producers of oil, but details are lacking.

It seems, however, that the time for developing Africa's oil reserves is not to come in a near future. The most important world oil producers and marketers are now well supplied. It is possible they will develop new oil fields which could only result in overproduction and a decrease of prices?

Moreover, it takes enormous amounts to prospect for and develop new oil fields in such wild and unhealthy places as these African countries. This is a work that small companies, with limited funds, would be foolish to undertake. The French companies now trying to develop the oil fields of North Africa do not average a capitalization of over 5,000,000 francs, at the present rate of exchange, not more than $300,000. Can anything be expected of such small companies outside of the drilling a very few wells which will not reach a depth of over 200 or 300 feet? This is certainly not the kind of work which will help developing the oil resources of Africa. Therefore, if the large companies do not feel justified in starting any new work at present in Africa, and if the small companies cannot do it, would it be reasonable to expect any new developments in the African oil situation? But, as we have said before, this is far from proving that oil beds cannot and will not be found in Africa later.

NATURAL GAS AND OIL INDUSTRY NEED MORE GOVERNMENT RESEARCH

(Continued from Page 64)

and the result would be to shut up his business. So it is the aim of the scientist often to modify the course he wishes to pursue by a rule of reason. There is a whole realm of information that would be useful in respect to paraffin sands and mineral salts in oil sands which are known to retard production. Such information would contribute greatly to methods of prevention as well as correction.

A great deal has been done in careful engineering studies of producing fields in order that the encroachment of water may be retarded and the greatest amount of oil obtained from various strata. Frequently a well will be plugged and abandoned to save a district or a portion of a field from being flooded whereas a careful engineering study of the problem as a whole would have shown it would have sufficed to plug up the bottom of the well, or perhaps recement a string of pipe and still obtain a great deal of production from that hole which otherwise is lost, because probably no one will go in and drill a new well beside the old one.

More Economical Prospecting

There are many studies that might aid in the more economical prospecting for oil and gas so that the area can be more thoroughly prospected at less cost. The oil industry in this county has arrived at a stage of its development where men are willing to drill to 4,000 or 5,000 feet to test a structure. That involves great cost and methods of prospecting should be developed to reduce that cost and insure an accurate knowledge of the formation penetrated when the job is complete.

These are only some of the multitude of problems that should be worked upon for the benefit of the industry and the country because it is only a matter of a short time when the difficulties of recovering petroleum will be increased and the cost will of necessity go up with the difficulties encountered.

No vast sum is required for this work and the industry would do well to guide the spirit that hovers about the national capital from useless hostility and bickering to appropriations for constructive work. It has been estimated only one-third of one per cent of the national revenues are used for scientific study and investigation. It is about time a survey should be made for scientific assistance to the oil and natural gas industries and a plan formulated for aiding all industry by such means. It will be found that no branch of national business can be better served than the oil and gas industry.

A Great Big Step Forward

The Titusville No. 6 Rotary

Realizing the demands for better equipment for deep drilling, we have built into the No. 6 these added features:

Higher carbon in steel castings throughout; holddown brackets extended almost entirely around the table, completely enclosed the raceway to keep out mud; an extra long keyway on the pinion shaft so that the sprocket can be accurately lined with the Drawworks sprocket; new conveniences built in for keeping the Rotary clean and well oiled.

The Lightning type drive bushings stay put when spudding, and ride the stem when coming out of the hole.

Combine this Rotary with a No. 6 Four Speed Acme Drawworks and a Titusville Twin Drilling Engine and you have an outfit that is several strides ahead.

The TITUSVILLE IRON WORKS Co.
TITUSVILLE ~ PENNA.

TITUSVILLE EQUIPMENT
Oil Country Boilers
Steam Drilling Engines
Tico Gas Engines
Flapper Valve Pumps
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Twin Drilling Engines
Rotary Machines Rotary Drawworks
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TITUSVILLE OIL COUNTRY MACHINERY
RUGGED ~ ENDURING

AFFILIATED COMPANIES FOR DISTRIBUTION
For Mid-Continent, Eastern, Western and Coastal Fields:
The Continental Supply Co.
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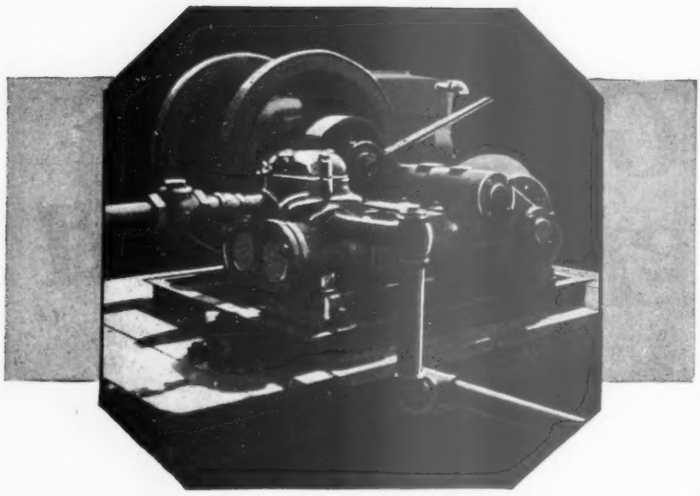
come in a near future. The most impor- ter served than the oil and



HERCULES

best withstands the strain of oil field duty

Under the never ceasing strain of oil field duty, only an engine *built* especially to stand such heavy wear and tear, can give really satisfactory and lasting service.

The Hercules Engine is built in our own plant—perhaps the most modern equipped engine plant in the country. From pig iron to paint it is our own product. And behind every Hercules Engine there is the backing of our many years of practical experience.

Hercules Engines are rugged. But they are also compact, simple and RELIABLE. They are weather resistant, and fired by the never failing Wico Magneto work continuously without a miss under the worst conditions.

With its remarkably small number of wearing parts you will find that a Hercules Engine apparently never breaks down. And when accidents do occur—rare indeed with a Hercules—you are sure to find a Hercules dealer nearby. For there are over 350,000 Hercules Engines giving satisfactory use throughout the country today, and this necessitates a nation wide organization.

In addition to gasoline burning Hercules Engines, there are Hercules Engines that burn kerosene and other Hercules Engines that burn crude oil. Before it leaves the factory every Hercules Engine is tested to develop its full rated horse power under a continuous pulling strain. Each is backed by the Hercules five year guarantee. Whatever job you have in mind, you will find that there is a Hercules to fit it.

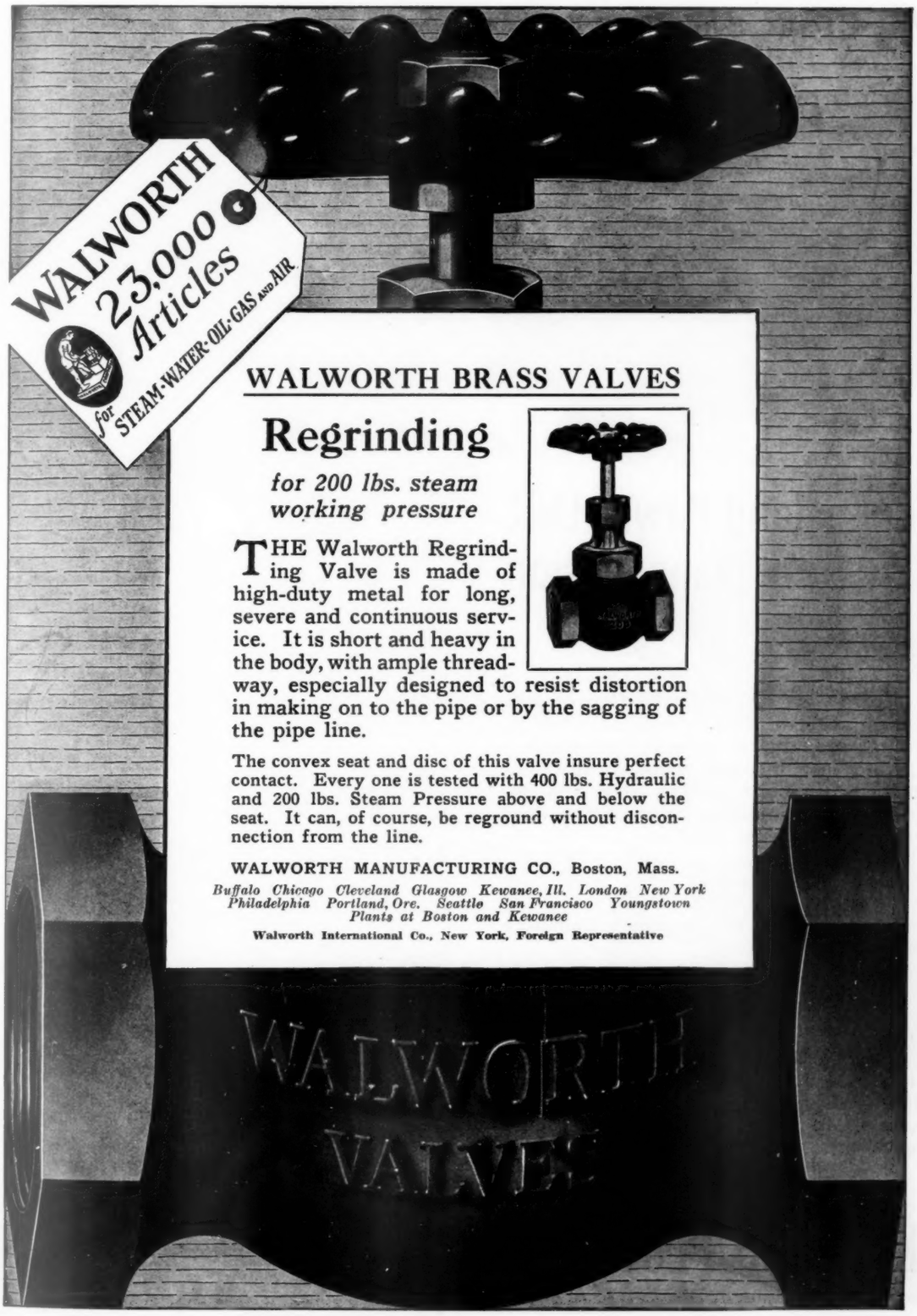
THE HERCULES CORPORATION
Engine Division E Evansville, Ind.

HERCULES ENGINES

TEXAS GROSS PRODUCTION, THIRD QUARTER

(Continued from Page 146)

Name and Address—	Barrels	Value
W. B. Flynn, Beaumont	7,237.52	10,682.93
Fogle Oil Co., Minerva	2,225.66	2,901.88
John B. Fortune, Luling	864.75	648.56
Fort Ring Oil & Gas Co., Fort Worth	4,127.51	6,483.32
Forty One Oil Co., Wichita Falls	3,137.92	4,738.77
Foster, Watson & Ferguson, Wichita Falls	1,234.26	1,894.74
Fountain Production Co., Saratoga	3,966.90	5,575.40
Four and Four Oil Co., Humble	798.44	1,057.99
Four States Oil Co., Wichita Falls	2,020.63	3,762.90
Perry I. Fox, Ranger	1,939.52	3,144.91
D. W. Franchot & Co., Tulsa, Okla.	476.64	834.02
Wirt Franklin, Ardmore, Okla.	23,067.15	34,615.54
Freeman-Hampton Oil Corp., Wichita Falls	24,471.62	38,283.53
Freeport Sulphur Co., Freeport	150	150.00
Fresno Oil Co., Wichita Falls	25,553.12	37,860.10
Frontier Oil Co., San Antonio	20,118.6	27,166.13
Fritz Fuchs, Taylor	1,690.08	2,132.54
E. E. Fuller, Wichita Falls	517.79	814.91
Fuller & Daniel, Wichita Falls	6,135.34	11,496.68
Gabler & Brannon Porter Associates, Eastland	2,445.58	3,257.80
Gabler & Brannon Porter Associates, Eastland	2,206.06	3,308.57
Galena-Signal Oil Co. (of Texas), Houston	148,756.18	216,087.32
Gallagher & Lawson, Desdemona	692.42	1,038.63
Galvez Oil Corp., Tulsa, Okla.	8,388.76	11,068.46
W. T. Garrett, Eastland	232.41	318.23
Gas Ridge Development Co., San Antonio	56	70.00
Gates Oil Co., Ardmore, Okla.	4,551.39	5,390.52
F. M. Gates, Wichita Falls	1,880.22	2,917.07
Gilbert Co., Beaumont	5,369.42	7,538.10
Gilliam Logan Oil Co., Fort Worth	4,956.30	5,911.16
Gholson Moorman & Dorsey et al Ranger	4,686.11	7,734.01
Gholson, Thompson, Barkley & Crotty, Ranger	15,392.26	25,884.40
W. D. Gillett et al, Cross Cut	890.76	1,362.45
Gilliland Oil Co., Tulsa, Okla.	1,902.93	3,044.69
Ginsburg & Bohner, Burkburnett	3,903.05	6,060.83
Gladys Belle Oil Co., Tulsa, Okla.	10,562.06	11,333.78
Glass Brothers, Minerva	2,648.03	3,055.35
M. E. Glasscock, San Antonio	753.08	958.83
Glasscock Leasing Syndicate, San Antonio	4,864.71	6,172.26
Glenridge Oil Corp., St. Louis, Mo.	4,350.61	6,861.63
F. L. Godfrey, Enid, Okla.	211.50	352.50
Godley Oil & Gas Co., Henrietta	124,383.06	199,491.00
Golconda Oil Co. No. 1, Wichita Falls	432.08	588.04
Goolsbee A. Graham, Wichita Falls	494.98	766.52
Goolsbee & Goolsbee, Wichita Falls	726.79	1,312.14
Gordon Oil Co. of Texas, Wichita Falls	84.48	105.60
D. Grady, Electra	902.96	1,368.58
H. L. Graham, Wichita Falls	1,339.28	2,052.27
Graham & Lash, Moran	4,804.14	7,278.82
Graham & Co., Breckenridge	506.76	716.61
Grand Duke Producing Co., Muskogee, Okla.	356.58	439.57
Granite Oil & Gas Co., Montrose, Colo.	419.76	713.60
Grayburg Oil Co., San Antonio	432,263.63	425,977.35
Grayce Oil Co., Burkburnett	18,356.26	29,124.62
Griswod Oil Corp., Wichita Falls	72,665.60	107,864.43
Gulf Coast Oil Corp., Houston	36,477.56	54,093.05
Gulf Royalty & Producing Co., Houston	13,127.76	10,712.40
Gulf Production Co., Houston	2,423,379.98	3,636,306.08
Gultex Production Co., Waxahachie	6,087.12	9,450.63
W. F. Gutzler, Wichita Falls	301.39	456.75
Gutzler & Cottingham, Indianapolis, Ind.	95.25	125.69
P. F. Gwynn, Trustee, Iowa Park	1,947.83	3,003.46
P. F. Gwynn, Wichita Falls	39,447.70	61,142.96
John Hablin, Sour Lake	7,053.09	9,343.72
Halliday & Caffall, Beaumont	832.43	1,173.00
Halmack Oil Co., Dallas	39,204.77	56,419.98
George Hambleton, San Antonio	901.41	1,180.37
C. G. Hamill, Bay City	375	506.26
H. L. Hamilton, San Antonio	10,960.46	15,881.71
Jake L. Hamon, Jr., Ardmore, Okla.	3,628.90	5,546.13
Hart Oil Corp., Fort Worth	1,983.79	3,417.82
Hart Mexia Syndicate, Fort Worth	711.55	1,200.99
Tom Harrell Oil Co., et al, Ranger	1,588.38	2,588.70
Tom Harrell Oil Co., et al (June 30, 1924), Ranger	748.77	1,684.73
R. A. Harvey, Houston	501	895.73
J. H. Haynes, De Leon	1,417	2,133.56
H. B. J. Oil & Gas Trust, Wichita Falls	4,059.63	6,560.67
Hefley, McIntosh & Thomas, Cameron	1,211.25	1,607.96
Helvetia Oil Co., San Antonio	16,755.38	27,781.08
J. M. Hemby, Electra	400.03	589.65
E. R. Henderson, Trustee, Tulsa, Okla.	647.17	861.77
J. V. Henley et al, Electra	4,358.19	5,437.71
Herbert Oil Co. of Texas, Fort Worth	432.76	649.14
Hereford Oil Co., Electra	9,674.48	15,040.11
George S. Herney, Breckenridge	91.08	130.97
Hester, Hawkins & Ferguson, Trustee, Wichita Falls	19,362.28	24,202.85
J. M. Hester, Trustee, Humble	1,220.30	1,660.38
Hickory Oil & Gas Corp., Fort Worth	708.80	1,004.75
Higgins Oil & Fuel Co., Houston	34,700.76	46,315.97
Hill & Jones, Tonkawa, Okla.	9,044.93	11,853.99
Hines Brodmann Co., Iowa Park	450.75	637.67
Hitchman & Howard, San Antonio	1,706.91	2,259.31
Homaokla Oil Co., Oklahoma City, Okla.	4,990.58	6,238.22
Hobbs, Chenault & Burleson, Wichita Falls	38,860.78	56,458.57
Hobron & Vorhees, San Antonio	2,558.29	3,368.19
Hockaday & Shaw, Wichita Falls	3,946.53	4,933.26
Roy Hoffman, Oklahoma City, Okla.	2,393.16	2,717.40
C. W. Hoffman & K. F. Page, Eastland	189.66	240.77
C. W. Hoffman & K. F. Page, (June 30, 1924) Eastland	189.72	332.01
Homaokla Oil Co., Oklahoma City, Okla.	7,075.10	12,148.38
Hofmeier & Deegans, Fort Worth	1,807.80	2,820.16
Hoo Hoo Oil Co., Burkburnett	174.65	298.67
John W. Hooser, Dallas	59,665.31	82,010.09
W. T. Hoppes, Burkburnett	168	218.38
Houston Oil Co. of Texas, Houston	11,511.21	15,344.59
Houston Production Co., Houston	118,295.94	139,119.99
Howard Petrol Co., Wichita Falls	1,471.18	2,942.36
Howd Oil Co., Wichita Falls	941.88	1,565.94
Hub Oil Co., Dallas	909.68	1,137.10
Hueco-Ranger Oil Co., El Paso	748.54	1,220.93
J. T. Hughes et al (March 31 1924), Mineral Wells	1,296.24	1,820.63
J. T. Hughes et al (June 30, 1924), Mineral Wells	2,416.40	5,332.93
J. T. Hughes et al, Mineral Wells	1,709.91	2,301.06
J. K. Hughes Developing Co., Mexia	472,325.58	482,159.57
J. K. Hughes Oil Co., Inc., Mexia	122,835.44	181,748.92
Humble Oil & Refining Co., Houston	4,128,070.37	5,960,356.04
Humphrey & Merritt, Wichita Falls	3,445.06	5,425.40
J. C. Hunt, Wichita Falls	1,982.11	2,223.64
Hyde Production Co., Fort Worth	26,176.46	35,496.65
Fred Hyer, Fort Worth	5,798.34	8,750.59
H-Y Oil Co., Inc., Fort Worth	11,266.96	16,384.14
Idaho Oil Co., San Antonio	2,830.99	2,985.53
A. G. Ilseng, Fort Worth	12,595.92	22,713.59
Indiahoma Refining Co., St. Louis, Mo.	4,191.83	6,192.03
Infield Petroleum Co., Austin	5,295.97	6,722.01
Inca Oil Co., New York City, N. Y.	2,628.88	4,172.83
Inland Oil Co., Wichita Falls	5,982.74	6,837.42
Invincible Oil Co., Shreveport, La.	40,554.44	65,324.38
Iowa Park Oil Co., Iowa Park	3,889.07	5,026.35
Ironland Oil Co., Duluth, Minn.	1,341.10	1,992.92
Jack Dalton, Mineral Wells	2,821.42	4,232.13
Jackson Co., San Antonio	2,447.07	3,618.24
Janellen Oil Co., Tulsa, Okla.	91.46	91.46
C. B. Japhet, Houston	1,926.31	2,718.97
Jarmon Oil Co, Austin	27,674.90	26,362.15
Ted R. Jay, Sipe Springs	308	492.80
Frank S. Jewett, Breckenridge	2,820.08	4,582.30
Johnson Bros., San Antonio	12,550.38	16,819.16
O. C. Johnson, Trustee, Laredo	3,774.15	2,940.86
C. A. Jones, Strawn	2,313.13	1,565.60
Jones Oil Co., Wichita Falls	33,306.08	55,437.87
Julia Oil Co., Sour Lake	4,666.19	6,918.48
Junior Oil Co., Cross Plains	4,783.95	7,822.70
Junior Oil & Pipe Line Co., Corsicana	1,549.72	1,384.75
Kate Bell Oil Co., et al, Dallas	3,858.11	5,611.03
Kavanaugh Petroleum Co., Houston	1,687.06	2,632.87
K. B. H. T. Syndicate, Vernon	1,246.06	1,938.16



WALWORTH BRASS VALVES

Regrinding

for 200 lbs. steam working pressure

THE Walworth Regrinding Valve is made of high-duty metal for long, severe and continuous service. It is short and heavy in the body, with ample threadway, especially designed to resist distortion in making on to the pipe or by the sagging of the pipe line.

The convex seat and disc of this valve insure perfect contact. Every one is tested with 400 lbs. Hydraulic and 200 lbs. Steam Pressure above and below the seat. It can, of course, be reground without disconnection from the line.

WALWORTH MANUFACTURING CO., Boston, Mass.

Buffalo Chicago Cleveland Glasgow Kewanee, Ill. London New York Philadelphia Portland, Ore. Seattle San Francisco Youngstown Plants at Boston and Kewanee

Walworth International Co., New York, Foreign Representative

Friction Transmission

The Greatest Feature Ever Built Into a Pumping Engine

ROCK ISLAND P. U. 51
25 Horsepower

"Built for the job—sold on performance"

The Rock Island Power Unit Has Friction Transmission

Because it—

Eliminates reverse gears and clutch—Cannot jerk load—Reduces danger of parting rods or breaking cable. Permits wide range of speeds—7 forward—7 reverse—operator can increase speed as load decreases—Reduces time for pulling well and increases production. Simplifies construction—less parts—fewer repairs—easier handled.

Operates on natural gas or gasoline. Complete control from well platform.

There are many other reasons why the Rock Island 4-Cylinder Pumping Engine equipped with Friction Transmission will operate your wells, requiring less attention from operator, less repairs, fuel and oil. Our catalog describing this machine in detail sent on request.

Manufactured by

ROCK ISLAND PLOW CO.

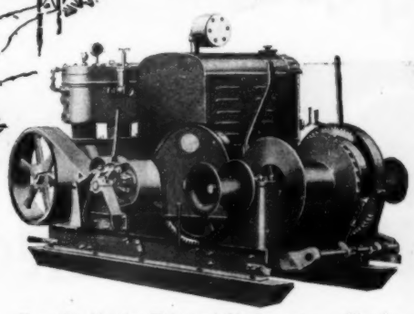
Rock Island, Ill.

C. F. CAMP AGENCY
Distributors, Tulsa, Okla.
14 E. 7th St. P. O. Box 289

Name and Address—	Barrels	Value
Keener Oil & Gas Co. of Texas, Tulsa, Okla.	6,208.65	7,008.91
Keever & Gordon, Sour Lake	377.22	519.41
E. F. Keith, Desdemona	2,453.4	4,070.84
E. L. Keltz, Vernon	6,780.53	10,786.60
Kemp-Munger-Allen Oil Co., Wichita Falls	6,612.24	8,887.86
Kemp, Randel & Wilson, Vernon	150	180.00
Kemp & Underwood, Cameron	562.56	782.83
G. C. Kent, Corsicana	260,543.11	328,417.07
Keough Bros., Cisco	4,488.12	7,713.53
Kentucky Oil Corp., Wichita Falls	11,002.41	26,467.54
T. P. Kerr, Corsicana	342.14	455.75
J. W. Keyes, Cisco	3,116.64	4,261.88
Keystone Drilling Co., De Leon	3,657.90	6,231.16
O. W. Killam, Laredo	797.96	580.64
Killam Condren Oil Co., Laredo	5,129.74	3,813.89
Kimbell & Dillard, Wichita Falls	7,025.28	10,480.72
King Booth & Nesbit Syndicate No. 2, Kansas City, Mo.	483.60	688.82
King Petroleum Corp., Wichita Falls	2,389.52	3,294.89
Kirby Petroleum Co., Houston	94,364.98	137,602.46
Kirk & Brewer, Gorman	4,611.72	7,794.60
K. Kishi, Terry	1,540.96	2,080.30
L. A. Knight, deceased, by Mrs. Sarah E. Knight, Plainview	4,382.57	6,337.29
F. F. Knotts, Wichita Falls	1,071.94	1,410.92
Knox-Lewis Oil Co., Eastland	3,165	5,606.73
C. F. Kolp, Electra	395.88	542.34
C. F. Kolp, Electra	5,139.72	7,049.90
Mrs. Fannie Kornfeld, Tulsa, Okla.	360.29	560.65
Haymon Krupp, El Paso	29,577.09	27,173.79
Kuhlemeier-Kleiner Oil Co., Cisco	3,341.14	4,836.38
Kurz Oil Co., San Antonio	860	942.86
Laclede Petroleum Co., Dallas	255	514.51
Ladd-Hannon Oil Corp., Fort Worth	743.94	929.90
Lain Oil Co., San Antonio	2,035	2,720.10
Lake Graham Oil Co., Houston	1,087.54	1,356.43
Lake View Oil Co., Sour Lake	19,651.78	25,111.60
George E. Lamb, Brownwood	3,078.50	3,969.12
Landreth Production Corp., Breckenridge	39,068.06	64,638.33
W. S. Langford, Wichita Falls	12,813.51	17,375.48
Laredo Oil Co., Laredo	7,124.07	7,124.07
W. B. Larkin et al, Wichita Falls	922.06	1,394.19
M. & Simon Lebow, Tulsa, Okla.	12,605.12	17,884.96
Homer Lee, Wichita Falls	1,395.38	2,009.66
Lee Farm Oil Co., Wichita Falls	985.32	1,251.12
Lee Oil Co., Minerva	4,353.52	4,903.60
Lee Haus Oil Co., Minerva	3,405.43	3,825.13
Lee Niehaus Oil Co., Minerva	1,056.48	1,158.74
Lee Phillips Oil Co., Minerva	2,348.83	2,636.22
Len-Cook Oil Co., Electra	4,659.58	6,060.87
George Leonard, San Antonio	119.03	142.79
Leonard Oil Co., San Antonio	310.68	414.61
Lewis Oil Co., Pittsburgh, Pa.	3,875.97	6,082.17
Lewis Oil Corp., Wichita Falls	8,381.78	13,130.91
Lewis Oil Co. and the National Refining Co., Pittsburgh, Pa.	80,519.73	118,718.29
J. B. Levy, Wichita Falls	2,068.04	3,318.73
Light Oil Co., Beaumont	2,039.89	2,774.13
B. M. Lindsey et al & Dixie Co. of Eastland, Dallas	5,269.45	9,060.40
Liner-Guerin et al, Breckenridge	822.68	1,191.00
Link Oil Corp., Houston	4,962.50	7,157.94
Lion Tamers Oil Corp., Albany	600.28	750.42
William Little, Breckenridge	3,677.57	5,913.21
Little Caddo Syndicate, Fort Worth	2,083.65	3,526.88
Henry S. Livingrtone, Fort Worth	510.96	684.69
Livingston Oil Corp., Tulsa, Okla.	39,687.05	63,546.08
Lone Star Refining Co., Wichita Falls	713.17	1,096.66
Lone Star Gas Co., Dallas	15,144.04	23,584.87
Longhart Supply Co., Fort Worth	1,183.58	1,703.70
Lou Ellen Oil Co., Denison	851.56	1,147.39
Lowe Perry Oil Co., De Leon	No barrels given	282.62
Lowe Delaney & Carter, De Leon	2,809.18	4,494.35
Lowry Oil Corp., Muskogee, Okla.	6,275.54	11,494.12
Lucky Seven Oil Co., Wichita Falls	114.12	159.42
Lytle Oil Association, Lytle	596.45	635.38
W. C. McBride, Inc., St. Louis, Mo.	3,809.19	4,270.99
Ed McCarty & Co., Galveston	283.27	283.27
McCarty Oil Co., Wichita Falls	80,161.23	110,241.21
McCree Petroleum Corp., Tulsa, Okla.	884.57	673.66
McDabb Oil Co., Wichita Falls	5,842.83	9,155.62
H. B. McDowell estate, El Paso	39.02	68.09
J. P. McEwan, Trustee, Fort Worth	2,209	3,543.70
G. W. McFann, Tulsa, Okla.	393.66	362.35
G. W. McFann, (March 31, 1924), Tulsa, Okla.	183.19	
Mrs. L. W. McGlothlin, Wichita Falls	826.87	1,193.76
McKes Oil & Gas Co., Ardmore, Okla.	1,448.33	2,296.32
Jerome McLester, Fort Worth	8,208.07	8,618.47
F. M. McMahon, Trustee, Denver, Colo.	2,397.61	4,126.02
McNamara Oil Co., Beaumont	2,974.60	4,149.11
McMan Oil & Gas Co., Tulsa, Okla.	141,892.23	206,594.57
McNeill Hardware & Implement Co., Valley Mills	104	130.00
McNallen & Griffin, Tulsa, Okla.	6,796.39	10,605.43
McVey, E. H., Kansas City, Mo.	6,902.03	8,659.81
Maben Oil Corp., Wichita Falls	998.80	1,615.36
Madiron Oil & Gas Co., Fort Worth	1,783.08	2,482.12
Maer & Staniforth, Wichita Falls	83,107.79	111,852.26
Magna Oil & Refining Co., Tulsa, Okla.	2,491.86	4,355.91
Magnolia Petroleum Co., Dallas	1,493,439.28	1,844,523.91
Mahlstedt Mook Oil Co., Fort Wort	23,741.34	39,263.39
Mann Oil Co., Wichita Falls	42.05	56.17
W. L. Mann & Cosmopolitan Oil Co., Wichita Falls	1,997.20	2,318.73
Mann McPhail Oil Co., Wichita Falls	114.12	159.43
Mann Power Oil Co., Wichita Falls	516.33	760.38
Mann & Forbes, Graham	4,531.09	5,606.02
R. W. Mancill, Cisco	311.46	427.02
Margay Oil Corp., Tulsa, Okla.	9,649.84	12,712.21
Marsalis Bros., Humble	926.41	1,397.53
Marnet Oil & Gas Co., New York City, N. Y.	4,506.62	5,956.50
Matador Oil & Gas Co., Quanah	1,231.50	1,539.46
Martin Bros., (June 30, 1924), Washington, D. C.	2,598.83	3,474.40
Martin Bros., Washington, D. C.	2,118.60	2,355.99
Martin Petroleum Co., Humble	3,919.86	5,997.39
Mary Elizabeth Oil Co., Dallas	99.11	139.70
Mayemack Co., Cisco	3,249.68	5,345.60
Mecom Oil Co., Houston	627.94	81,853.44
Medina Oil & Gas Assn., San Antonio	565.09	736.83
G. W. Mennis, Wichita Falls	4,886.98	9,397.31
J. D. Meredith, Moran	464.40	531.32
Meridian Petroleum Corp., Tulsa, Okla.	7,844.20	14,241.80
Miami Land Oil Co., Laredo	8,861.32	6,683.93
Michel & Witcher, Wichita Falls	734.88	1,168.42
Emil Michna, Wichita Falls	1,766.21	2,476.69
Mid-Co Petroleum Co., Tulsa, Okla.	1,003.55	1,467.67
Mid-Kansas Oil & Gas Co., Findlay, Ohio	96,671.47	158,091.81
Midway Petroleum Co., Brownwood	555	613.00
Middletown Tex Oil Syndicate, Eastland	2,113.99	2,058.26
Middletown Tex Oil Syndicate, Eastland	920.44	1,400.50
Miller & Garitty, Corsicana	396.75	499.00
Herbert G. Miller, Eastland	4,730	6,317.39
Miller Bros., Breckenridge	1,653.51	2,066.88
Mills & Garitty, Corsicana	687.10	914.10
Minerva Petroleum Co., Minerva	9,346.41	13,483.19
Minor Oil Co., Beaumont	1,119.24	1,364.38
Minntex Oil Corp., Wichita Falls	580.53	467.75
Mirando Oil Co., Laredo	644.14	708.78
G. P. Mitcham, Fort Worth	138.20	190.36
Amos J. Mitchell, Wichita Falls	1,840.76	2,072.63
Mitchell & Jones, Corsicana	667.14	918.35
Mogul Oil Corp., Eastland	802.20	1,284.38
Mohegan Oil Co., Mohegan Lake, N. Y.	66,869.93	91,994.91
Monarch Oil & Refining Co., Houston	680.10	926.37
Monroe Production Co., Graham	2,203.10	2,959.49
Montgomery Rea Montgomery, Sedwick	2,285.54	3,595.61
Montrose Oil Refining Co., Inc., Shreveport, La.	27,829.83	49,187.59
Mook-Texas Oil Co., Eastland	1,618.68	2,227.54
N. A. Moore, Eastland	6,766.76	11,292.94
F. L. Moore, Tulsa, Okla.	1,044.03	1,387.35
Moore & Henderson, Tulsa, Okla.	4,064.58	6,597.47
Moss & Keys, Mexia	28,790.71	37,912.03
Murchison Fain & Golding, Wichita Falls	9,517.72	14,752.46
Murchison & Fain et al, (June 30, 1924) Wichita Falls	6,773.02	10,498.18
Murchison & Fain et al, (June 30, 1924), Wichita Falls	687.66	852.32
Murchison & Fain et al, Wichita Falls	16,815.12	22,316.57
Murchison & Fain et al, Wichita Falls		

24 Hour-a-Day Pumping Service

Novo Type U Pumping Outfit



Novo Combination Hoist and Air Compressor. Fine for building oil tanks, bridges and culverts, laying of pipe lines, etc. Powered with Novo Four Cylinder Industrial Engines (18 to 40 H.P.).

YOU must have a dependable water supply for your drilling operations.

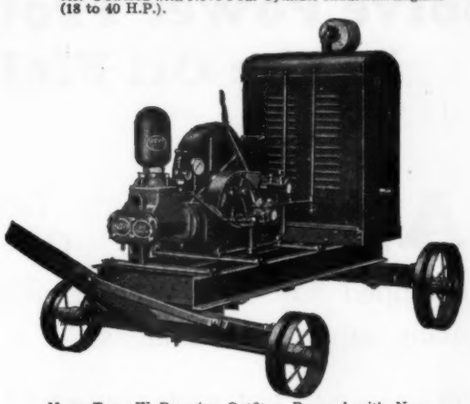
You may have to bring your water two or three miles; you may have to pump against a stiff elevation.

Novo Pumping Outfits deliver 24-Hour-a-Day Service week after week. They do this easily and do it well.

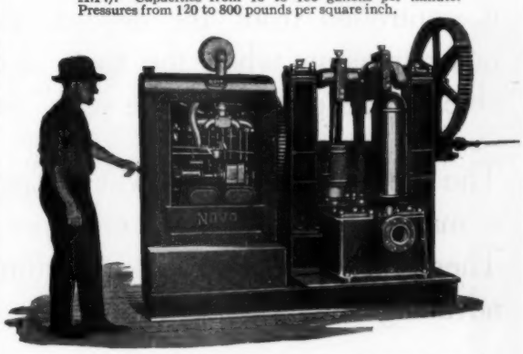
With little attention other than the supplying of fuel and oil, Novo Pumping Outfits deliver service as dependable as steam pumps and at much less cost.

Sooner or later you will be convinced that these sturdy units are the most economical and dependable means of supplying water for your job.

It will pay you to get in touch with us now and be prepared when an emergency arises.



Novo Type W Pumping Outfits. Powered with Novo Single, Two and Four Cylinder Industrial Engines (6 to 18 H.P.). Capacities from 13 to 130 gallons per minute. Pressures from 120 to 800 pounds per square inch.



Novo Triplex Pumping Outfits. Powered with Novo Single, Two and Four Cylinder Industrial Engines (4 to 40 H.P.). Capacities from 18 to 200 gallons per minute. Pressures from 150 to 250 pounds per square inch.

NOVO ENGINE CO.
Clarence E. Bement, Vice-Pres. & Gen. Mgr.
LANSING — MICHIGAN
Cable Address "NOVO LANSING"
Distributors Throughout the World

NOVO POWER
Keeps Operations Moving

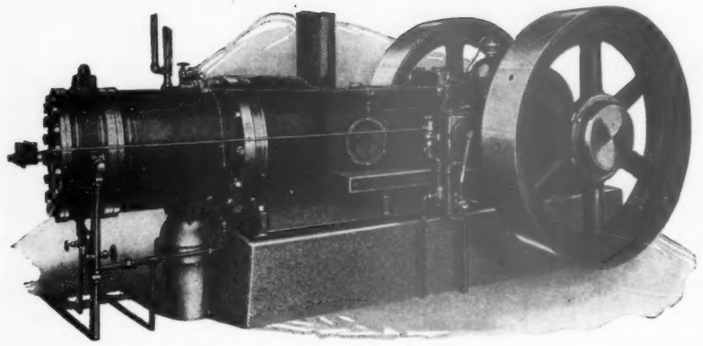
ENGINES
Single Cylinder, 1½-10 H.P. (frost proof)—two cylinder, 6-12 H.P.—four cylinder, 12-40 H.P.

HOISTS
Single and double drum—one and two speed and reversible, portable heavy duty types—powered with Novo Engines

NOVO RELIABLE POWER

PUMPS
Open and closed top diaphragm—centrifugal—deep well—single, duplex double acting and triplex pressure pumps.

COMPRESSORS
Three sizes up to 170 cubic feet—with steel housings—mounted on trucks. Combination hoists and compressors



PRIMM
OIL ENGINES

Solve Power Problems In the Oil Fields

As demonstrated at the Tulsa Exposition "PRIMM" Oil Engines equipped for Oil Well Drilling have many superior advantages.

The speed of the "PRIMM" Drilling is controlled from the derrick and its quick pick-up when the tools drop enables it to "get out of the way" readily.

The fuel cost of a "PRIMM" Engine is a matter of but a few cents per hour. These are but two of a multitude of advantages.

Write for further information.

DRY TYPE SEMI-DIESEL **SINCE 1902**

THE POWER MFG. CO.
722 Cheney Ave., Marion, Ohio

Name and Address—	Barrels	Value
Murchison & Fain et al, Wichita Falls	9,153.11	13,496.17
Murphy Oil Co. of Pennsylvania, Philadelphia, Pa.	1,019.56	1,019.56
H. A. Muse, Wichita Falls	1,528.81	2,543.91
Mutual Oil Consolidated, Fort Worth	3,811.94	5,041.70
Mutual Oil Consolidated (June 30, 1924) Fort Worth	6,951.84	15,572.12
Mutual Oil Consolidated (March 31, 1924), Fort Worth	4,811.08	6,879.94
Mutual Oil Consolidated (Dec. 31, 1923), Fort Worth	11,604.36	13,894.36
Mutual Oil Co., Denver, Colo.	200,228.60	303,639.45
M & V Oil Co., Wichita Falls	3,238.03	6,434.23
Nalso Petroleum Co., San Antonio	1,737.14	3,490.84
National Oil Co., San Antonio	2,429.82	3,716.61
National Supply Co. of Texas, Toledo, Ohio	582.80	833.84
Newblock Oil Co. of Texas, Tulsa, Okla.	14,154.20	21,973.35
New Domain Oil & Gas Co., Inc., Pittsburgh, Pa.	10,090.37	16,019.53
New England Texas Oil Refining Co., Easthampton, Mass.	222	351.41
Nine Hundred Oil Co., Burkburnett	99	133.65
Noack Oil Co., Rockdale	3,323.50	5,232.51
Noble Oil & Gas Co., Tulsa, Okla.	8,640.13	13,782.58
Norba Oil Co., Wichita Falls	2,237.90	3,502.34
Nortex Drilling & Dev. Co., St. Louis, Mo.	517.92	697.30
North Texas Oil Co., Vernon	5,991.26	9,160.34
Nueva Oil Co., Laredo	3,295.45	2,428.69
Ocean Oil & Refining Co., El Paso	329.49	444.31
O'Donohoe-Gates Drilling Co., Wichita Falls	204.04	266.65
Emile Offenbacher, Tulsa	519.16	832.46
Emile Offenbacher, trustee, Tulsa, Okla.	80.54	96.65
Ohio Somerset Oil Co., San Antonio	2,614.03	2,983.46
Oil Development Co., St. Louis, Mo.	1,697.53	2,296.11
Oil Investment Co., Wichita Falls	4,026.40	5,033.00
Oil Production Co., Houston	1,439	1,798.75
Oktaha Co., Tulsa, Okla.	933.86	1,466.96
Old Colony Oil Co., Dayton	2,261.79	2,631.22
W. S. Oldham, Beaumont	2,766.35	3,447.31
Omilak Oil Co., Spokane, Wash.	749	883.40
O'Neall Well No. 1, Colorado	1,297.72	1,314.73
John O'Neill, Wichita Falls	28,761.63	65,076.40
H. A. O'Neil, Wichita Falls	3,659.31	8,640.55
Orange eProteum Co., Orange	52,066.12	75,296.62
Oriental Oil Co., Dallas	3,249.09	4,636.35
Thos. R. T. Orth, Wichita Falls	981.47	138.73
J. D. Overby, Iowa Park	1,923.61	3,568.67
Owens Petroleum Co., Cameron	2,843.04	3,747.70
Owens Refining Co., Cameron	238.16	297.70
Owenwood Oil Corp., Fort Worth	8,048.72	13,141.40
Oxford Oil Co., Houston	6,966.94	12,401.15
Ozark Oil Co., March 31, 1924, San Antonio	1,595.01	2,091.63
Ozark Oil Co., June 30, 1924, San Antonio	1,528.13	2,096.91
Ozark Oil Co., San Antonio	1,462.76	1,686.43
Chas. Paggi & Co., Beaumont	2,163.19	3,060.84
Paggi Brothers Oil Co., Beaumont	13,189.42	19,032.60
Palmer & Chenault, Wichita Falls	569.96	889.13
Freddie Palmer Oil Co., Rockdale	389.74	393.53
Panhandle Refining Co., Wichita Falls	183,547.45	297,346.87
Paraffine Oil Co., Houston	2,267.92	4,528.70
Paraffine Oil Co., Houston	10,375.10	15,553.33
Parkersburg Drilling Co., Cisco	22,147	32,480.62
Parrish Lease, Wichita Falls	1,522.36	2,202.37
Parry Oil Co. of Texas, Fort Worth	2,729.06	4,449.54
J. R. Patterson, Brownwood	162.64	183.39
Patterson Lake Oil Co., Corsicana	23,298.23	37,766.31
Pennok Oil Co., Tulsa	39,491.76	62,719.47
J. J. Perkins, Wichita Falls	9,035.12	14,445.26
Perkins & Cullum, Wichita Falls	23,200.76	38,720.65
Peter Oils, Inc., Chicago, Ill.	2,555	890.60
Petroleum Development Co., New York City, N. Y.	3,306.47	4,363.58
Petroleum Producers Co., Wichita Falls	57,432.50	78,764.41
Philp Brothers, Beaumont	1,735.30	2,588.93
Joseph W. Phillips, Wichita Falls	1,766.21	2,476.69
Phillips Oil Co., San Antonio	8,374.85	7,781.65
Phillips & Milam, Chelsea, Okla.	511.28	717.34
Phillips Petroleum Co., Bartlesville, Okla.	14,211.30	24,756.51
Pierce Petroleum Corp., New York City, N. Y.	5,261.42	7,812.28
Pinto Oil Co., Mineral Wells	277.69	388.49
Pioneer Oil & Refining Co., San Antonio	290.83	316.64
Pioneer Oil, Gas & Refining Co., Danville, Ill.	2,696.06	3,563.15
Pitzer and West, Breckenridge	12,007.56	18,851.96
M. E. Pivoto, Sour Lake	5,758.58	8,984.68
Planet Petroleum Co., Bartlesville, Okla.	87,461.72	142,662.60
P. & M. Oil Co., March 31, 1924, Shreveport, La.	146.79	206.22
P. & M. Oil Co., June 30, 1924, Shreveport, La.	156.04	251.10
P. & M. Oil Co., September 30, 1924, Shreveport, La.	158.47	236.71
M. Pois, trustee, Wichita Falls	820.41	1,341.57
Pois & Britain, trustees, Wichita Falls	14,225.73	19,896.99
Pois and Kruger, trustees, Wichita Falls	12,289.64	19,549.90
Pomona Texas Oil Syndicate, Pomona, Cal.	1,774.68	2,820.51
Pomona Mutual Oil Syndicate, Pomona, Cal.	4,498.44	7,205.69
Pope and Wilson, Inc., Oklahoma City, Okla.	19,930.64	30,176.07
Porter & Barnard, Wichita Falls	477.76	653.88
B. E. Porter & Co., Wichita Falls	656.38	946.45
Post Oak Oil Co., June 30, 1924, Chilton	1,645	2,188.50
G. L. Powell, Moran	7,655.43	11,105.51
J. L. Powell, Wichita Falls	577.07	918.40
Powers Production Co., Houston	3,150	4,746.55
Prairie Lea Production Co., San Antonio	18,899.94	17,009.94
Prairie Oil & Gas Co., Independence, Kans.	249,599.65	402,093.59
Ed Prather Special, Houston	722.87	996.98
Prescott-Phoenix Oil & Gas Co., Wichita Falls	2,494.85	4,468.36
Prescott-Phoenix Oil & Gas Co., Muskogee, Okla.	356.58	639.07
Preston Oil & Gas Co., Brownwood	1,092	1,474.20
Prewitt Syndicate, Inc., Humble	3,440.66	4,742.60
Price, Russell & Co., Ranger	17,747	26,045.70
Walter M. Priddy, Wichita Falls	21,744.65	34,791.44
Primrose Oil Co., Sour Lake	2,538.11	3,314.09
Producers Supply & Tool Co., Marietta, Ohio	732.76	1,133.26
Progressive Production Co., Kansas City, Mo.	12,214.77	19,330.85
Pure Oil Co., Columbus, Ohio	2,035,510.85	2,977,499.04
Quakins Petroleum Co., New York City, N. Y.	8,655.75	14,565.91
J. W. Quigg, trustee, Laredo	7,480.06	9,973.73
Quincy Oil Co., Chillicothe	251.88	336.21
Rapp, Huffman & Kline, Electra	108.10	184.75
Henrietta C. Ramming, Wichita Falls	1.18	1.67
R. W. Ramming, Wichita Falls	16.44	23.37
W. F. Ramming, Wichita Falls	53.23	90.91
Ramming Staley & Ramming, Wichita Falls	1,263.96	2,402.55
Otis M. Ramsey, Breckenridge	1,779.41	2,597.97
Ranger-Gulf Corp., Tulsa, Okla.	8,959.37	14,183.40
R. W. Raney (Bob Raney Oil Co.), Breckenridge	11,603	18,822.44
R. W. Raney, Breckenridge	2,648	4,140.05
Ray, Featherston Oil Co., Inc., Wichita Falls	13,814.55	17,268.82
J. P. Rayzor, Wichita Falls	300.32	376.21
Reclamation Co., Fort Worth	30,840.40	47,769.84
Red River Oil Co., Tulsa	18,733.77	34,712.77
Regna Oil Co., Saratoga	5,776.86	7,139.37
M. J. Reinhart, trustee, Oklahoma City	1,660.19	2,157.73
Reliance Oil Co., Houston	426.33	575.55
Rentex Oil Co., San Antonio	4,227	5,282.73
Republic Production Co., Houston	779,981.20	1,117,194.21
Rhodes and Highers, June 30, 1924, Breckenridge	5,320.68	10,962.61
Rhodes and Highers, Breckenridge	4,023.86	4,414.67
Richmond Garcia Oil Co., Laredo	22,940.86	18,078.26
Henry Riley, Breckenridge	673.90	800.74
Henry Riley Co., Breckenridge	567.68	782.22
Riper and Bailey, Wichita Falls	108,206.57	207,249.87
Rio Bravo Oil Co., Houston	209,545.94	278,696.14
Rio Grande Petroleum Corp., Houston	16,865.92	12,664.95
M. C. & Summerfield G. Roberts, Dallas	714.83	1,072.24
J. A. Robertson, Santa Anna	134.50	134.50
J. B. Robinson, Atty., Sour Lake	999.96	1,564.85
A. D. Robinson, Dallas	4,533.38	6,679.37
Roberts & Hill, Wichita Falls	11,059.57	15,351.51
Rockdale Oil Co., Minerva	2,331.92	2,656.91
J. A. Rockwell & Co., Warren, Pa.	8,791.89	13,964.27
Rocky River Oil Co., Wichita Falls	576.78	887.79
Roeser and Pendleton, Inc., Breckenridge	18,209.49	28,643.97
Royal Production Co., Houston	3,642.70	5,228.03
C. M. Root, Eastland	128.76	193.14
Root, Rhodes and Sykes, Eastland	16,388	16,993.69
Jacob Rosenberg, Tulsa, Okla.	299.85	458.97
Ross Amigos Oil Co., Laredo	12,325.35	9,176.95
Ross Segunda Oil Co., Laredo	2,911.34	2,161.35
Dwight M. Ross, Wichita Falls	10,990.74	20,202.69
Ross and Slicker Oil Co., Fort Worth	3,472.79	4,253.74

It's a Wilson

A Big Event—
A Big Story!

We got ourselves into print—in the Los Angeles Times—without our knowldege.

3 records smashed!

With WILSON Speed Elevators

Another Wilson Achievement! . . . . . Here is an excerpt from the big illustrated story which appeared in the Los Angeles Times on November 5: "This organization set 3,839 feet of 11-inch casing, weighing 54 pounds to the foot, in its Morland Wildcat Well, near Compton. . . . . ." Total weight of this string of casing was *104 tons*—eclipsing by *9 tons* the record of the nearest competitor! Three records were smashed to smithereens! However, experienced oil men were probably not much surprised. They know that Wilson Speed Elevators are actually safer, faster, stronger than others—and embody the famous "sure-grip" spring latch mechanism which has been and is today and will be one of the outstanding inventions in the oil equipment world for years to come. . . . . And experienced oil men know, also, that Wilson Speed Elevators are delivering exceptional service in practically every American and foreign field. Records are being smashed almost every day with these remarkable elevators. That is because they are built to meet *every* conceivable condition; because they are supremely simple in design; because they have ample strength to withstand abusive service and excessive strains encountered from time to time; because they represent the very last word in scientific engineering, in accessibility and workability!

....Send for Folder of Facts today!

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SALES OFFICES
Tulsa, Oklahoma, 400 Atlas Life Bldg.

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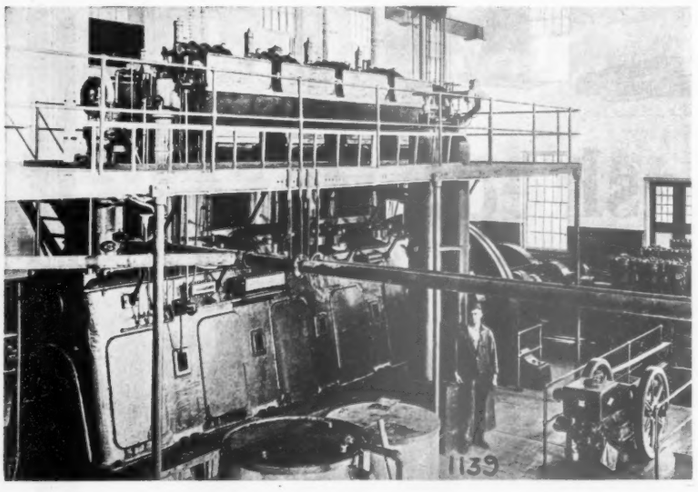
McINTOSH & SEYMOUR

DIESEL OIL ENGINES

IN SIZES FROM 20 TO 8000 B.H.P.

FOR ALL PURPOSES



665 B.H.P. Engine Driving High Pressure Pipe Line Pump

McIntosh & Seymour heavy duty four-cycle Diesel Engines make successful Pumping Units in pipe line stations.

The Chief Executive of a large pipe line company writes us as follows:

"For your information I wish to say that this company has several different makes of crude oil combustion engines, namely: ——, ——, ——, ——, and McIntosh & Seymour. Of the latter we have the most and I believe have tried them out in a more severe test than any of the others, and from my general observation and from reports and talks with our Superintendents, Engineers and Machinists, the McIntosh & Seymour is more satisfactory than any of the other makes we have in use."

Let us have your inquiries. We will be pleased to send you our latest Bulletin No. 73G

McINTOSH & SEYMOUR CORPN

MAIN OFFICE AND WORKS AUBURN, NEW YORK, U. S. A.

SALES OFFICES AT

615 SHELDON BLDG. SAN FRANCISCO, CAL.

412 BISBEE BLDG. JACKSONVILLE, FLA.

149 BROADWAY NEW YORK CITY

330 HUMBLE BLDG. HOUSTON TEXAS

1015 BALTIMORE, AVE. KANSAS CITY, MO.

Name and Address—	Barrels	Value
Rountree & Simpson, Rockdale	485.94	640.24
Roundtree Lee Oil Co., Rockdale	2,125.62	3,292.20
A. H. Rowan et al, Corsicana	14,290.25	19,328.60
M. D. Rowe, Wichita Falls	267.11	403.37
Roxana Petroleum Corp., St. Louis, Mo.	246,529.98	341,474.97
Royalties Investment Co., San Antonio	430.01	637.52
Royalties Investment Co., San Antonio	245.60	366.98
Rubsam & Hunter, Wichita Falls	1,039.96	1,544.50
C. E. Rumbaugh and T. J. Esterly, Mooringsport, La.	154.46	206.50
Russel Frank Oil Co., Wichita Falls	42.05	66.17
Russell-Sanderson Oil Co. No. 3, Fort Worth	1,773.75	3,161.83
Ruyle Farm & Oil Co., Wichita Falls	19,556.01	31,502.66
Ryan Petroleum Corp., Bartlesville, Okla.	71,954.25	99,055.93
Rycade Oil Corp., Houston	221,726.01	306,306.15
Rydal Oil Co.-Coursen-Matches, San Antonio	4,475.31	3,347.80
Rydal Oil Co., San Antonio	18,464.70	15,805.78
Sammel, West & McCandless, Robinson, Ill.	2,103.22	3,188.40
San Bait Petroleum Co., San Antonio	9,195.73	14,089.86
San Bernard Oil Co., Beaumont	4,108.54	6,095.20
Sankey Oil Co., Fort Worth	11.45	17.77
Sanders-Taylor Oil Co., Wichita Falls	8,385.21	12,193.31
Saratoga Oil Co., Wichita Falls	17,071.13	25,196.69
John R. Saunders, Wichita Falls	53.23	86.30
John R. Saunders & W. F. Ramming, Wichita Falls	10,915.64	17,561.46
W. A. Scarborough, Burkburnett	2,589.53	3,797.76
Schlicher Oil Co., Beaumont	1,145.71	1,673.33
George A. Schmidt, Wichita Falls	3,176.24	4,369.13
R. E. Schoolfield, Wichita Falls	172.28	225.84
Schott Oil Co., Laredo	12,410.35	9,333.88
Seay-Cranfill & Reynolds, Corsicana	81,929.31	121,136.84
Selma Oil Co., Houston	649.83	813.63
Selma Oil Co., Houston	1,697.69	2,480.52
E. G. Senter, Jr., Dallas	882.54	330.95
I. P. Sessions, Rockdale	166.48	171.94
Seybert Brothers and Barger, Mooringsport, La.	10,810.38	15,738.33
Shallow Oil Co., Denver, Colo.	150.38	18.75
Shamrock Oil Co., Wichita Falls	194,966.91	253,497.59
Shamrock, Bridwell and Mayfield, Wichita Falls	27,003.82	38,710.61
T. O. Shappell & Son, Wichita Falls	3,989.56	6,040.51
Shappell Oil Co., Wichita Falls	63,955.42	92,351.63
Shaw and Lee, Wichita Falls	1,788.28	2,414.17
Shaw and Rathke, Wichita Falls	42,949.14	67,452.55
Shemen Oil & Gas Co., Pittsburgh, Pa.	150.98	242.50
Shertzer Brothers, Dewey, Okla.	6,068.58	8,339.37
Sigler Oil Co., Inc., Wichita Falls	4,784.99	4,998.39
Silk, Bullington & Clark, Wichita Falls	9,035.61	9,035.61
W. W. Silk, Wichita Falls	377.12	565.69
Silurian Oil Co., St. Louis, Mo.	4,746.44	8,186.40
Simms Oil Co., Dallas	588,816.00	825,642.30
Sinclair Oil & Gas Co., Tulsa, Okla.	93,475.35	140,307.82
Sinclair Oil & Gas Co., Houston	115,656.68	169,908.00
Joel Sink, Corsicana	197.6	244.66
Sioux Oil & Oil Ref. Co., Wichita Falls	2,619.84	4,454.94
Sipe Springs Oil Co., Sipe Springs	151.40	219.17
Sam Sitrin, Tulsa, Okla.	463.12	744.88
Moris Sitrin, Tulsa, Okla.	120.40	194.53
Sixty Six Oil Co., Wichita Falls	30,164.74	37,871.37
Skelly Oil Co., Tulsa	137,122.69	201,703.78
E. W. Skinner Oil Co., Saratoga	5,846.70	8,263.93
T. B. Slick et al, Oklahoma City, Okla.	21,137.99	33,910.93
Sloan Oil Co., Colorado	31,659.47	30,557.19
St. Mary's Oil & Gas Co., St. Mary's W. Va.	6,058.08	10,922.76
E. L. Smith Oil Co., Inc., Mexia	31,583.72	45,840.73
George A. Smoot, Wichita Falls	395	493.00
C. W. Snider, Wichita Falls	3,760.92	6,037.37
Snowden & McSweeney Co., New York City, N. Y.	124,772.70	192,875.88
Somerset Crude Oil & Ref. Co., San Antonio	6,612.57	8,161.67
Somerset Oil Co., San Antonio	1,909.48	2,100.44
Sooner Oil Association, Wichita Falls	2,118.70	2,648.37
Southern Petroleum Co., Houston	9,631.19	13,826.19
South Stephens Oil Synd., Fort Worth	355.32	488.57
Southern Exploration Co., Houston	1,857.6	2,507.76
South Vernon Oil Co., Vernon	4,225.46	4,226.66
Southern States Lease & Prod. Co., Los Angeles, Cal.	5,102.92	7,653.59
Southwestern Petroleum Co., Tulsa, Okla.	694.34	1,064.13
C. D. Speed, Corsicana	163	223.08
Sprawls, Harwell & Cook, Abilene	1,281.24	1,557.96
Sprawls, Harwell & Cook (supplemental), Abilene	309.22	494.75
St. Louis Oil & Dev. Co., Wichita Falls	949.83	1,540.78
J. A. Staley, Wichita Falls	9,203.16	12,862.90
J. I. Staley, Wichita Falls	15,245.63	24,684.13
Staley and Fritz, Wichita Falls	4,332.82	6,464.44
Staley, Langford and Wynne, Wichita Falls	2,101.24	2,865.34
Staley and Wynne, Wichita Falls	83,604.24	131,945.92
Staley Mashburn Oil Co., Wichita Falls	472.54	731.57
Standard Oil Land & Leasing Co., Electra	254.54	335.84
Standifird Brothers, Iowa Park	1,610	492.76
Standifird Brothers (rtorage oil), Iowa Park	1365	1,634.00
Star State Oil Co., Moundsville, W. Va.	205.065	242.68
States Oil Corp., Eastland	65,046.51	92,559.59
Charles Steele, Moran	697.86	943.97
Stella Oil Co., Beaumont	7,840	11,331.81
Stephens Oil Co., Sour Lake	942.54	1,288.30
Stidham, Thrasher and Humphrey, Electra	1,683.30	2,104.13
O. M. Stidham and C. C. Thrasher, Electra	141.20	276.81
F. W. Stone & Co., Cross Plains	1,955.27	2,443.08
Stout Oil Co., Brownwood	62	86.43
E. C. Stovall, Graham	1,074.48	1,966.29
Stovall Oil & Gas Co., Moran	6,670.82	10,024.50
Straus-Allen Oil Co., Wichita Falls	4,380.54	5,475.67
Strawn Petroleum Co., Denver, Colo.	12,256.52	18,826.56
Stroube & Stroube, Corsicana	52,366.99	82,542.67
Sunray Oil Corp., New York City, N. Y.	175	249.25
Supreme Oil Co., Orange	3,052.67	5,204.33
Superior Oil Producing Co., Lexington, Ky.	3,027.67	4,083.60
Superior Oil Co., Superior, Wis.	57.01	81.66
R. O. Stull, Wichita Falls	28.75	47.49
H. L. Sturm, Ardmore, Okla.	664.81	1,084.53
Sun Oil Co., Dallas	1,080,875.93	1,808,695.64
Swartika Oil Syndicate, Olney	25,228.96	38,232.73
Swensondale Oil Co., Caddo	42,645.39	69,304.07
Oscar Talley, trustee, Burkburnett	394	591.00
Taylor-Sibley Syndicate, Dallas	3,535.40	4,612.16
T. & B. Pipe Line Co., Wichita Falls	4,439.04	7,982.36
The Texas Co., Houston	2,570,089.44	3,818,525.56
Texas Consolidated Oil Co., San Francisco, Cal.	3,964.76	6,385.14
Texas Electra Co., Columbus, Ohio	493.88	646.98
Texas Buffalo Oil Co., San Antonio	822.80	962.11
Texas Fidelity Oil Corp., Louisville, Ky.	26,333.11	35,464.18
Texas Oil Producing Co., Dallas	249.6	274.79
Texas Oil Producing Co., June 30, 1924, Dallas	207.02	310.25
Texas Petroleum Development Co., Cameron	9,504.35	10,675.62
Texokan Producing Co., Coffeyville, Kans.	13,150	19,658.67
Texhoma Oil & Ref. Co., Wichita Falls	489,308.41	693,481.45
Texota Petroleum Co., Electra	790.16	1,026.63
Texas Southern Oil & Dev. Co., San Antonio	4,069.39	5,360.19
Texas Oil Corp., Dallas	301.60	397.52
Texas Pacific Coal & Oil Co., Thurber	254,299.18	414,525.36
Other companies for Texas Pacific Coal & Oil Co., Thurber	171,934.06	271,098.81
Texas Plains Syndicate, Chicago, Ill.	529.22	661.52
Texas Plains Oil Co., Casper, Wyo.	1,269.80	1,587.25
Texana Oil & Ref. Co., Wichita Falls	1,569.07	2,066.79
Texana Oil & Ref. Co., June 30, 1924, Wichita Falls	2,163.38	3,352.20
Thall Oil Co., Beaumont	1,098.43	1,415.74
W. H. Thaxton, Austin	334.72	418.40
H. J. Thomas, Somerset	328.58	314.70
H. J. Thomas, June 30, 1924, Somerset	321.42	460.00
Mack Thomas, Wichita Falls	287.64	442.96
Mack Thomas, June 30, 1924, Wichita Falls	400.91	773.76
J. L. Thompson, trustee, Ranger	5,834.14	8,957.20
Thompson Oil Corp., Ranger	11,896.64	17,675.37
W. J. Thompson et al, Colorado	5,506.83	6,377.71
Thompson and McKinnis, Ranger	2,011.88	2,358.17
Three Rivers Oil Co., San Antonio	18,976.69	19,324.51
H. C. Thorman et al, San Antonio	3,805.93	3,425.34
H. C. Thorman et al, June 30, 1924, San Antonio	2,766.69	2,075.01
Tidal Oil Co., Tulsa, Okla.	408,067.84	737,606.09
Tidal Osage Oil Co., Tulsa, Okla.	7,761.64	14,058.94
Tidal Western Oil Corp., Tulsa, Okla.	3,969.52	6,928.94
R. V. Tidwell, trustee, Graham	3,905.06	4,657.49
R. V. Tidwell, receiver, Graham	4,143.64	6,150.53
R. V. Tidwell, trustee, Graham	1,590.68	2,332.80

LET THESE MEN

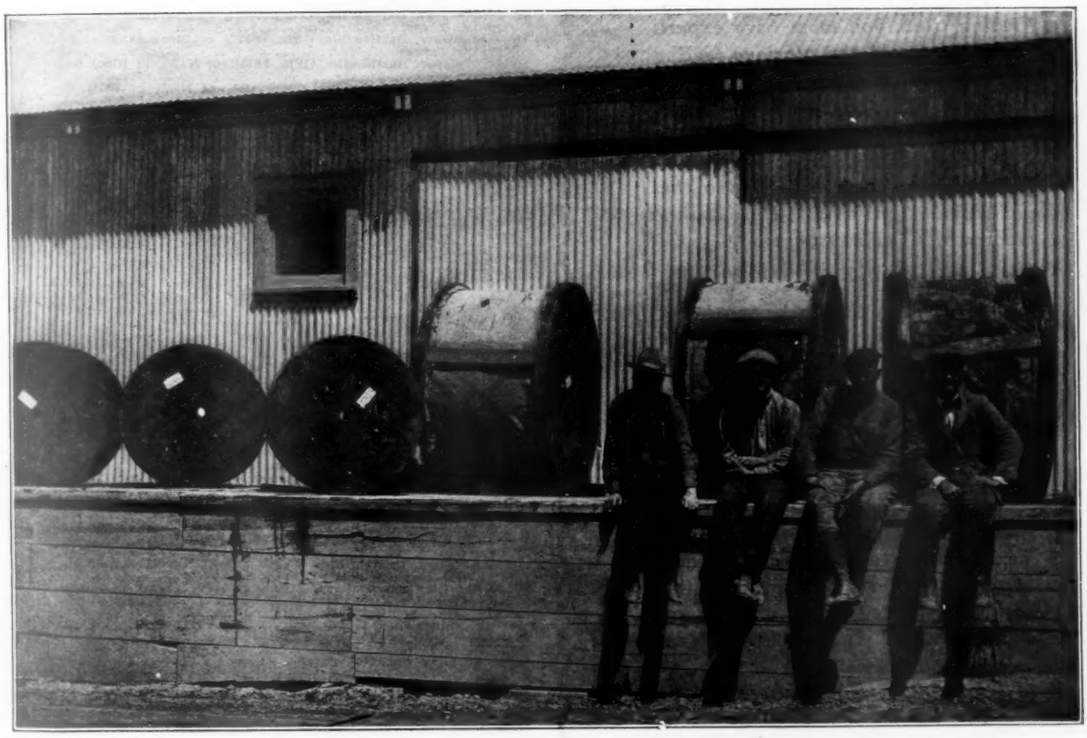
L. V. Farmer, Warehouse Foreman; James Finch, Production Foreman; Frank Woodbeck, Field Superintendent, of the Marine Oil Company, Salt Creek, Wyoming.

tell you why they like

WILLIAMSPORT

Telfax Tape Marked—Factory Certified

WIRE LINES



Marine Oil Company's Warehouse and Platform—Williamsport Wire Lines Used Exclusively. Left to right: L. V. Farmer, Warehouse Foreman; James Finch, Production Foreman; Frank Woodbeck, Field Superintendent; F. H. Smith, Salesman.

In every field you'll find careful men like these using Williamsport Lines, not only because they have found in them a more uniform product, but because of the protection against getting the wrong grade—and a possible fishing job.

The patented Telfax Tape woven into and throughout every inch of Williamsport Lines, each grade a distinctive color states the make and grade in Plain English. No other Wire Line gives you this vital protection. Most careful men are using Williamsport Lines, others will, eventually. Now is the time to start.

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SERVICE IN EVERY IMPORTANT FIELD

22

A Few of the Members of the S. I. O. R. Fishing Club

—and how they got in

To belong to the Success-in-One-Run Fishing Club, you must have experienced the grand and glorious feeling of cleaning up a fishing job on the first run. The official tools are the DEVIL'S STEEL HAND and the DEVIL'S PITCHFORK. If you have qualified, send us the details so that you may be "initiated." Here are the records of a few members:

J. M. Hickey, Cactus Oil Co.—Lost a lug off a 5 3-16" Swan Underreamer. Recovered it with a Devil's Steel Hand on the *first run.*

George Callahan, Albany, Texas—Lost lug of same-sized underreamer as Hickey's. Fished it out with same Devil's Steel Hand—also on *first run.*

Charles Dutton, drilling in Putnam, Texas—Broke a big chunk off of a 15½" bit—the kind of accident that has often caused plugged holes and skidded rigs. Devil's Steel Hand snared its fish, weighing 225 lbs., on *first run.*

These are just a few—there are many more. Considering them, can there be any doubt that the Devil's tools constitute the most remarkable advance ever made in fishing tools of this class? Prices and other details on request. Immediate shipments.

BROWN WELDING & MACHINE CO.
Breckenridge, Texas
Tulsa Rental and Sales Office: 424 East Second St., Tulsa

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DEVIL'S STEEL HAND and PITCHFORK

Name and Address—	Barrels	Value
L. J. Tillery Oil Co., Beaumont	6,214.13	8,006.78
W. E. Timblin, Wichita Falls	860.60	1,259.32
Johnnie Tolbert Oil Co., Midlothian	4,177	6,766.74
Transcontinental Oil Co., Pittsburgh, Pa.	11,833.70	17,188.50
Triangle Oil Co., Wichita Falls	1,203.94	2,280.44
Tri Mutual Oil Dev. Co., June 30, 1924, Rapid City, S. D.	79.72	115.60
Tri Mutual Oil Dev. Co., Rapid City, S. D.	16.26	27.72
Trinity Production Co., Dallas	1,537.03	1,960.21
A. C. Trumbo, Muskogee	31.58	43.31
C. A. Tucker, Dallas	68,912.25	97,615.29
Tucker and Fox, Dallas	2,626.42	4,752.58
Tucker and Fox, Dallas	224,166.03	317,534.72
Tucker and Langford, Wichita Falls	51,277.19	81,004.23
Tulsa Co., Wichita Falls	630.18	1,011.31
Turner and Clayton, Inc., June 30, 1924, Eastland	6,755.21	14,487.93
Turner and Clayton, Inc., Eastland	3,978.10	6,502.71
Two Republics Oil & Gas Co., Laredo	14,150.99	10,586.63
Tyson Oil Co., Sour Lake	1,733.52	2,766.99
Underwood Drilling Co., Wichita Falls	12,342.30	19,346.74
Underwood Drilling Co., Wichita Falls	38,458.90	36,261.71
Union Oil Co. of Nevada, Graham	7,155.34	10,371.66
United Central Oil Corp., Houston	90,471.74	145,764.34
United Oil & Fuel Co., Wilmington, Del.	800.86	1,094.37
United Production Co., Wichita Falls	8,913	13,812.71
Unity Oil Co., Beaumont	15,362.90	22,904.95
United North and South Oil Co., Luling	2,462,287.82	2,309,898.81
Upham Gas Co. of Texas, Mineral Wells	1,717.66	2,574.34
U. S. Tex Oil Corp., Fort Worth	21,385.50	30,750.39
Val Verde Oil Co., Del Rio	3,425	4,815.75
Van Cleave Oil Trust, Wichita Falls	2,733.37	4,419.29
Varner Oil Co., Houston	36,182.57	43,626.64
Vat Oil & Gas Co., Byers	251.07	251.07
C. H. Verschoyle Wichita Falls	22,952.12	34,324.16
Virginia Oil Association, Fort Worth	5,167.84	8,356.73
R. M. Waggoner Special, Wichita Falls	6,061.24	8,994.36
R. M. Waggoner Special, June 30, 1924, Wichita Falls	6,291.40	13,218.36
A. C. Walker, Wichita Falls	370.39	979.37
B. S. Walker, Breckenridge	1,727.50	2,650.44
P. G. Walker, Jr., Tulsa, Okla.	91.46	91.46
Walker-Caldwell Producing Co., Breckenridge	11,582.36	15,396.53
P. E. Wallace, Corsicana	2,523	3,987.39
Dr. Charles William Wallace, Wichita Falls	72,073.37	99,282.50
J. A. Watkins, Wichita Falls	212.8	467.55
Faye R. Ward, Dallas	72.54	90.68
Webb Oil Co., Humble	5,285.60	7,411.38
Howard Weber, Bartlesville, Okla. (NE¼ of Block 83, Wichita County, Texas)	5,365.19	8,900.10
Howard Weber, Bartlesville, Okla. (SW¼ of Block 83, Wichita County, Texas)	4,814.84	7,749.16
Howard Weber, Bartlesville, Okla. (SE¼ of NW¼ of Block 88, Wichita County, Texas)	1,738.12	2,855.02
Howard Weber, Bartlesville, Okla. (S½ of NE¼ of SE¼ of Block 88, Wichita County, Texas)	1,383.34	2,294.79
Howard Weber, Bartlesville, Okla. (Five-acre tract in SW¼ of Block 97, Wichita County, Texas)	746.02	1,212.46
Howard Weber, trustee, Bartlesville, Okla. (W½ of NE¼ of SW¼ of Block 88, Wichita County, Texas)	910.89	1,503.96
Weldon Oil Co., Saratoga	9,584.38	12,190.60
Wells & Guiberson, Vernon	3,503.1	3,503.1
W. G. Welles, trustee, Nacogdoches	712	1,246.00
F. B. West, Houston	2,793.38	3,803.21
West Production Co., Houston	3,103.63	4,876.12
Westervelt-Noble et al, Oklahoma City, Okla.	10,926.26	17,889.02
Western Oil Fields Corp., Denver, Colo.	212,226.43	312,426.02
Western Oil Corp., Wichita Falls	2,257.28	4,061.12
Whaley Mineral & Realty Trust, Fort Worth	7,990.66	10,540.45
Wheatley Oil Co., San Antonio	79,830.81	64,848.50
Wherry and Laughman, Beaumont	1,327.06	1,934.64
Wherry and Rambo, Beaumont	1,011.14	1,594.45
James H. White, Wichita Falls	1,010.32	2,020.64
C. W. Whitehead et al, Graham	4,947.59	6,738.07
F. H. Wickett, Shreveport, La.	4,702.83	3,757.32
Burt Williams, Wichita Falls	1,330.91	1,653.64
John H. Williams et al, Dallas	5,475.26	9,355.74
R. L. Williams, Brownwood	140	140.00
Wilmut Farm Oil Co., Wichita Falls	29,255.21	38,317.27
Wilson-Broach Co., Beaumont	20,258.31	29,820.23
W. W. Overby Lease, Wichita Falls	804.06	1,230.05
Wilson Drilling Co., Wichita Falls	6,699.26	10,622.19
Wilson and Mead, Corsicana	3,858.81	5,179.06
Winnipeg Oil Co., Wichita Falls	10,006.00	15,208.50
Winnipeg Oil Co., June 30, 1924, Wichita Falls	12,335.01	23,175.74
Wise and Jackson, Sapulpa, Okla.	6,380.57	9,057.96
Annie L. Witcher, Guardian, Wichita Falls	5,260.92	8,151.91
Witherspoon Oil Co., San Antonio	78,539.85	95,816.81
Wittmer Property Trustee, March 31, 1924, Pittsburgh, Pa.	665.76	1,402.57
Wittmer Property Trustee, Pittsburgh, Pa.	15,514.16	22,146.34
Frank T. Wolfe, Wichita Falls	1,510.79	1,979.13
Frank T. Wolfe, June 30, 1924, Wichita Falls	1,467.2	4,115.58
Wonder Oil Co., Inc., Houston	1,805.89	2,657.98
Owen A. Wood, trustee, Fort Worth	13,538.84	19,358.76
G. C. Wood et al, Wichita Falls	26,640.27	37,296.38
Woodburn Oil Corp., Dallas	39,280.09	53,953.69
Woodrow Lee Trust, Wichita Falls	988.68	1,819.55
M. T. Yates, Wichita Falls	1,766.21	2,476.69
Yoakum-Shiner Oil Co., Yoakum	10,793.4	9,979.45
Yount-Lee Oil Co., Beaumont	118,778.43	187,558.63
Yuba Oil Co., Nacogdoches	321.87	598.67
Yuba Refining Co., Nacogdoches	305.35	567.96
Total	32,315,688.67	$44,551,657.36

CINCINNATI GAS RATE WAITS NEW VALUATION

CINCINNATI, Ohio, Dec. 15. — Announcement is made by W. W. Freeman, of the Union Gas & Electric Co., that the gas company will accept the ordinance extending the present gas rate in order that the city council may engage an expert for the purpose of instituting and completing a survey of the valuation of the company's properties and arriving at a just and equitable rate to all concerned.

Mayor Carrel vetoed an ordinance passed by city council providing for the employment of an engineer to make the investigation in the rate of charges for natural gas to be furnished for public and private consumption. His reason for vetoing that ordinance was that the ordinance did not specifically provide for the making of a valuation of the property of the Union Gas & Electric Co. which he had insisted upon when he vetoed the former rate ordinance, but only required the expert's investigation and report upon a fair rate for gas. He objected to one firm of experts suggested for the survey and favored the appointment of W. D. Hagenah, of Chicago, to do the work.

ANOTHER BOLTON, KANS., WELL

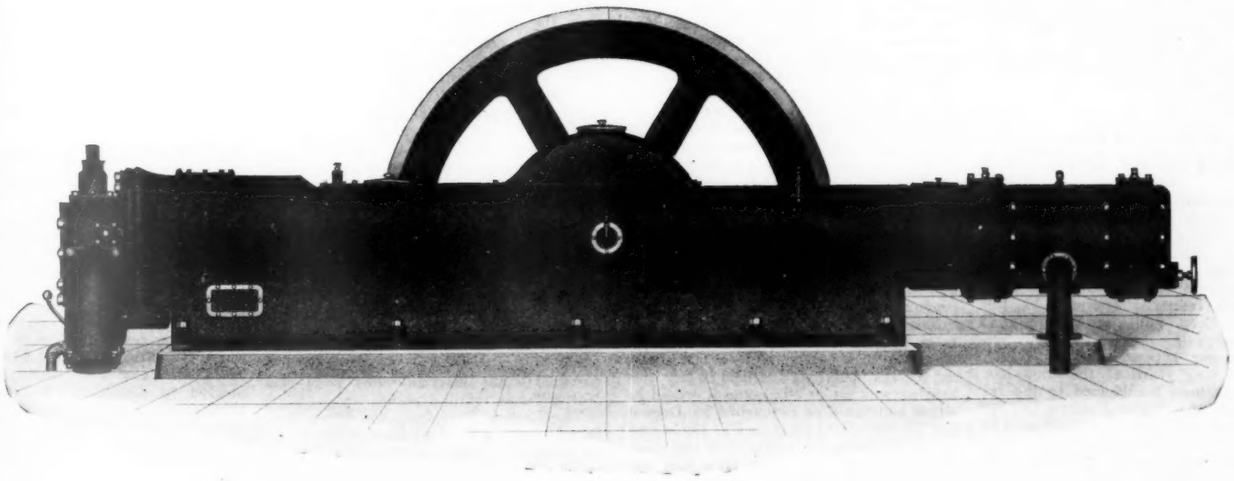
Harris, Pomeroy and Glendenning have moved a drilling rig onto the Giger farm, southeast of Bolton, Kans., where they will put down another gas well. They now have three producing gas wells on this farm in the Bolton sand. One of the first big gas wells ever drilled in the field west and south of Independence was struck on the Giger farm, coming in a thirty million producer. It caused a sensation at that time. The wells now developed in the shallow sands do not come in with the volume of the old days but they are good steady producers. The gas is taken by the Southwestern company.

REPORTED PIPE LINE PURCHASE

The Pierce Petroleum Corp is reported to have purchased the Consolidated Pipe Line, consisting of 50 miles of 4-inch main trunk line, 86 miles of branch and gathering lines, and the pumping stations. The line runs north and south through Pawnee, Tulsa, Creek, Okmulgee and Okfuskee Counties, Oklahoma, serving a territory with large independent production. The replacement value is said to be about $550,000.

Watts-Miller

The Miller Improved Gas Engine Company
Springfield, Ohio



No one should ever doubt that he will not be rewarded who gives to the world something distinctly superior to that which has preceded it.

A superior article will always be recognized.

The Watts-Miller Opposed Type Gas Engine Gas Compressor came into a seemingly crowded field.

It almost immediately swept its way into unpreceded acceptance.

Why?

The designer (Mr. Watts) brushed aside all outworn traditions in gas engine designing and showed he was master of the situation.

The Cylinder Head embodies features that has never been approached before.

Valve chambers are cast separate each independent to expand and contract to meet working conditions.

Where Cylinder Liner fits main frame water passages are arranged where circulation is set up between cylinder head and cylinder liner through these passages.

This method of keeping this joint cool is far reaching.

It insures constant operation as there will be no overheating. It avoids prematuring as this is caused from this joint being made solid and becoming intensely hot.

Watch this space where we will point out other important details of the Watts-Miller.

REFINING AND MARKETING

REFINING CONTRACT TO BETHLEHEM STEEL

NEW YORK, Dec. 13.—Eugene G. Grace, president of the Bethlehem Steel Corp., has announced that the company has closed a contract with the Argentine Government for the immediate erection of a complete oil refinery at La Plata, Argentina. The contract is the first venture of its kind by the Bethlehem organization. Work on the new refinery, which will cost $7,000,000, is expected to be completed within two years. The refinery will be capable of handling 14,000 bbls. of crude oil daily.

A statement issued by the Bethlehem Steel Corp. says: "The Comodore Rivadavia oil fields in the Argentine have already been developed to produce more than 14,000 bbls. of crude oil per day. Further development of Argentine oil fields is under way. The oil is carried in tank steamers up the coast from the wells to La Plata. It is expected that the development of the Argentine's oil fields and home refining will encourage the use of motor vehicles and gasoline-driven farm implements throughout the republic."

WAITE PHILLIPS CO. REFINERY OFFICIALS

G. T. Granger, of Amarillo, Tex., has been appointed superintendent of the Okmulgee, Okla., refinery of the Waite Phillips Co. Mr. Granger has been doing pipe line construction work in the Panhandle area. He was formerly connected with refineries operated by the Pierce Oil Corp. and the Producers & Refiners Corp.

Mr. Granger succeeds V. R. Oakley who, after four years at the Okmulgee refinery, has been transferred to the refinery which the Waite Phillips Co. recently purchased from the Sterling Oil & Refining Co., at Wichita, Kans. The latter plant will resume operations as soon as a pipe line is completed connecting with the Rainbow Bend Pool in Kansas.

TO OPERATE PREMIER PLANT

CHICAGO, Dec. 13.—The Chicago Oil Refining Co. has been incorporated for $100,000 to operate the old Premier plant at Blue Island, a suburb of Chicago. The Premier plant has gone through a long chain of owners. It is rated as a 2,500-bbl. skimming plant. The identity of the new owners has not been announced. The last to operate the plant was the Martin Oil & Refining Co., which ran the refinery when its own plant at Hammond was destroyed by fire. Mr. Martin stated he would probably continue to operate both plants after the Martin plant was rebuilt but did not do so. Some local oil companies who have both a marketing and jobbing business have looked over the plant from time to time with a view to making use of it.

ILLINOIS MARKETERS TO MEET

The annual meeting of the Illinois Petroleum Marketers Association will be held at the Congress Hotel, Chicago, Thursday, December 18. The annual election will be held at that time. J. L. Murray, of the Cornbelt Oil Co., Bloomington, Ill., is president of the association.

CANAL FOR REFINERY

BEAUMONT, Tex., Dec. 13.—The Gulf Refining Co. is completing the construction of 6 miles of new canal connecting up the Beaumont Irrigation Co.'s system and the McFaddin canals. The water will assure an adequate supply for the company's refinery located here.

ADJOURN I. C. C. HEARING AT ST. LOUIS DECISION NOT EXPECTED FOR SOME TIME

ST. LOUIS, Dec. 13.—The hearing before the Interstate Commerce Commission of the Mid-Continent oil rate cases closed today. This is considered the largest case involving freight rates on petroleum and petroleum products that has been heard before the Interstate Commerce Commission. Rates on all refined petroleum products from the entire Mid-Continent Field to what is termed western trunk line territory, covering the States of North and South Dakota, Minnesota, Wisconsin, Iowa, Nebraska, and the northern peninsula of Michigan, and the State of Illinois, being the destinations involved. The territory of origin includes the States of Arkansas, Louisiana, Oklahoma, Kansas and Texas.

An entire month's time has been consumed in the taking of testimony. The first hearing, at Excelsior Springs, Mo., consumed approximately 10 days; the hearing at Fort Worth, Texas, another 10 days, and 10 days have been taken up with the hearing at St. Louis. It will likely be considerable time before a decision is rendered by the commission. There have been approximately 200 exhibits introduced, ranging from 1 to 150 pages each. All of these exhibits, together with the evidence, will have to be reread before the Interstate Commerce Commission, in addition to the briefs which will be filed by the various contesting and intervening parties, and oral argument has been presented before the commission in Washington.

The Texas Co.'s case, involving export rates on petroleum and petroleum products, has been postponed to a later date, as it was definitely decided when this hearing was set at St. Louis it would be either concluded or adjourned by December 13, so all the time at St. Louis was taken in presenting evidence in the western trunk line case. No time was left for the hearing of the export case.

Claims for Adjustments

Evidence has been introduced by the various origin groups as to their respective claims for various rate adjustments—the petroleum shippers in the Ranger-Breckenridge, Eastland and adjacent territory group introducing evidence stressing the importance of the casinghead gasoline or natural gasoline industry in that section, and that large quantities of this produce were shipped into the territory involved in this case, and that they should have more favorable consideration than in the past decisions of the commission, because of the importance of the industry in that section at present.

The refining industry in the vicinity of Ardmore and Wynnewood, Okla., contended they should be continued in the present Oklahoma Group 3, origin territory, which includes practically all of the State of Oklahoma, largely on account of their commercial situation. They stressed the point that the crude oil, which they were compelled to use in their refining was not so good a quality as that produced and refined in the balance of the Oklahoma origin groups. The Ardmore intervenors also emphasized the important consideration that the Interstate Commerce Commission should give to pipe line competition in the future, it being decided that should the freight rates at this time be advanced, it would be possible that common carrier pipe lines make rates for both crude oil and refined oil that would take this movement from the railroads entirely, and transport the entire commodity by pipe line.

The railroads proposed in their exhibits introduced at previous hearings, that the San Antonio group of refiners should be placed in a separate group by themselves, and should take a rate higher than the rate from Houston and adjacent territory into western trunk line destination. San Antonio intervened and contested such a proposal on the grounds that the difference in distance, and the commercial conditions, did not justify any increased rate over the Houston group. They cited the fact that other commodities were given the same rate basis as Houston, both to and from San Antonio, and similar contentions were made by the refining industry in the vicinity of Enid, Okla., with respect to their continuance in the present Group 3, or in any new originating group that might be decided upon as a basis for the rates from Tulsa and northeastern Oklahoma.

They stressed the fact that their distance beyond Ponca City and adjacent points did not justify any rate higher than the rates from Ponca City into the destination territory involved. They also emphasized that their commercial conditions were practically the same, both as to crude supply and refinery operations.

Protested Increase

The refining industry at Shreveport, La., and El Dorado, Ark., intervened in protest of being excluded from the present Group 3 adjustment, and contended for the same rates into destination territory they are now accorded. They were strongly opposed to the taking of the Shreveport group of refiners from their present grouping, and also protested any increase in their rates to the eastern half of western trunk line territory. They conceded that their distance into the western half of the destination States involved might justify their level of rates being increased to the level of rates from the North Texas refining points.

The Roxana Petroleum Co. intervened in support of the complaint of the Kansas refining industry and contended their rates should not be increased, and that they should either be kept on their present basis or allowed a differential under the rates from northeastern Oklahoma.

The White Eagle Oil & Refining Co. intervened in behalf of the north Texas companies, and cited that its Fort Worth plant was at the present time shipping large quantities of gasoline into the destination territory involved. Evidence was introduced to show that prior to the time north Texas was accorded the rate into destination territory 2½ cents higher than the rates from Oklahoma Group 3 points, they were unable to make any shipments into that territory, but since December 8, 1922, their business has not only increased into Western trunk line territory, but they have invested a considerable sum of money in that destination territory in the establishment of bulk and retail stations for the distribution of their products. The affirmed previous evidence introduced by North Texas refineries, stressing that should any increase be made in the rates to this destination territory involved, they would likely be compelled to close that point, or to operate at very heavy losses on account of no territory in which to dispose of their products.

Summarizing Evidence

In summarizing the evidence presented by the refining industry it appeared most of the industry south of Kansas was pretty well satisfied with the present rate adjustments, and most of them satisfied with the present rate relationship. All refining points emphasized strongly the effect of any increased freight differentials over any other original group, their contentions in all case being based largely upon the commercial conditions surrounding each origin territory, the Kansas refineries being practically the only ones who considered they should be accorded

(Continued on Page 196)

MUTUAL CO. ENLARGING GLENROCK REFINERY

CASPER, Wyo., Dec. 13.—The Mutual Oil Co. is starting a program of enlargement at its refinery at Glenrock, Wyo., which calls for the expenditure of $250,000. The capacity of the plant will be increased to 15,000 bbls.

This refinery takes practically all the production of the Big Muddy oil field which is about 2 miles west of the plant, and also the Mutual has pipe line connections with Casper so that Salt Creek or any other oil can be sent there. The Standard of Indiana has a cracking plant in conjunction with the Mutual's refinery which handles the cracking stock from the Mutual and cracks same to gasoline and coke. The Standard's plant was enlarged last summer.

The Mutual came to Wyoming in 1920 from Kansas and built the Glenrock plant, then a merger was made with other interests here and an agreement was reached by which the Mutual took over the Midwest interests in the Big Muddy Field and also enlarged the scope of its field operations considerably. At present the firm is ranked among the largest operators of this region.

REFINERIES ENLARGING RETAIL DISTRIBUTION

WICHITA FALLS, Tex., Dec. 13.—The Texhoma Oil & Refining Co. and the Panhandle Refining Co. are enlarging their retail distributing facilities in this city. Both companies have refineries here.

The Panhandle company recently completed two retail stations and the Texhoma company is erecting two additional stations. The first company recently started to distribute its own products through retail stations having in the past depended on tank cars and bulk stations sales to handle its refinery output. The company expects to erect additional stations in this section in the near future. The Texhoma company has operated stations here for several years.

F. A. FITZGERALD DIES

CHATHAM, Ont., Dec. 13.—Frederick Ardiel Fitzgerald, founder and first president of the Imperial Oil Co. of Canada, died at his home at London, Ont., after a lingering illness, in his eighty-fifth year. He became interested in the Petrolia oil development in the 90's, and established the refining enterprise of A. E. Fitzgerald Co. of London. Later this company was amalgamated with other Canadian refining enterprises to form the Imperial Oil Co. of London, of which Mr. Fitzgerald was president and general manager till its sale to the Standard Oil Co.

PAN-AMERICAN EXPANDS

SAN FRANCISCO, Cal., Dec. 13.—The Pan-American Petroleum Co. will be one of the large retail and wholesale distributors of gasoline in this city and Oakland early next year according to announcement of officials. The company is said to have appropriated $1,500,000 to erect warehouses, storage facilities and stations. The products sold will be shipped from the company's plant in Southern California.

NEW LOUISVILLE REFINERY

LOUISVILLE, Ky., Dec. 13.—The new plant of the Louisville Petroleum Refining Co. will be in operation here within 90 days according to W. M. Mitchell, president of the company. The refinery is located on a 40-acre tract within the city limits. It will cost $500,000 and will use the Dubbs cracking process.

If you want to use an 18-inch yardstick to measure the results of what a cracking process will do, you are fooling nobody but yourself and your stockholders

The Dubbs Process uses only a 36-inch yardstick to measure results It measures its gasoline yield each day on the total number of barrels of charging stock processed each day

But if you do use an 18-inch yardstick, apply it to the Dubbs Process the same as you do to any other, and you will see results that will astonish you beyond your expectations

Universal Oil Products Company
Owners of the Dubbs Process
312 South Michigan Ave
Chicago Illinois

for the company's refinery located here. than the rate from Houston and adjacent (Continued on Page 196) process.

Advocates Special Winter Motor Fuel

Expert Says It Would Increase Consumption of Gasoline. Value of Dopes Discussed. Automotive and Petroleum Industries Should Cooperate

By John A. C. Warner
Research Manager, Society of Automotive Engineers
Before American Petroleum Institute, Fort Worth, Tex.

Responsibilities in the fuel situation are such as to demand the fullest cooperation between the automotive and petroleum industries. Only through concerted effort can a suitable balance be maintained between the automotive equipment and the fuel that is so essential to its satisfactory operation.

Availability of power is undoubtedly the principal factor upon which the average motor vehicle operator bases his conclusions concerning the acceptability of a motor fuel. The starting characteristics and acceleration or getaway are the features which matter most.

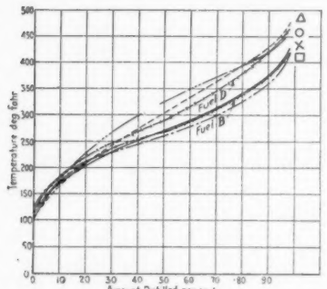


Fig. 1—Distillation Curves of the Four Fuels Used by the 10 Automobile Companies and of the *B* and *D* Fuels Used in the Bureau of Standards Tests

One of the most conclusive demonstrations of the validity of the above statements was brought out by the winter road tests that were arranged in connection with the cooperative fuel research program in which the American Petroleum Institute, the Bureau of Standards, the National Automobile Chamber of Commerce and the Society of Automotive Engineers are associated.

Thirteen of the 57 drivers from 10 automobile companies who cooperated in these tests reported definitely concerning the relative merits of the four fuels tested. They had no means of identifying the fuels except by symbol and by characteristics in driving. Figure 1 shows distillation curves and designations for the fuels. The drivers' rated fuels X, triangle, square and circle as first, second, third and fourth in the order named. It is interesting to note that this order of preference follows the order of volatilities from the 14 to the 20 per cent points of the distillation curves. This range appears to determine the starting and acceleration characteristics which were found to influence so greatly the order of preference. It appears that very slight temperature differences in this range have a relatively large effect upon the fuel characteristics.

Dilution

The winter road tests further emphasized the fact that greater dilution results from the use of the heavier fuels. This is clearly indicated by the curves in Figure 2 in which the grouping of the fuel and the relative dilutions with respect to volatility should be noted. The curves also show that a point of approximate equilibrium was reached after runs of comparatively short duration.

Owing to the nature of these curves due care should be exercised in their interpretation. The points plotted for each fuel represent average values made up from 57 car-week observations. The dilution values were not taken at different mileages from a single car, but from many cars whose runs varied greatly, thus making the conditions of operation different for each point. Account should be taken of the fact that these conditions, especially temperature, were not the same for short as for long runs.

Fig. 3 shows how different percentages of dilution affected the viscosity and specific gravity of the oils used in certain groups of cars. The curves of Fig. 4 were derived from those of Fig. 3 and show the relative variations of the viscosity and specific gravity at different percentages of dilution.

As regards dilution, the motor car operator has no ready means of gaging the acceptibilty of a given fuel. The results from using fuels containing excessive amounts of the heavier constituents are marked and are of great importance so far as the life of the engine is concerned. But there is no outstanding and immediate danger signal to warn the driver of impending difficulties. He is thus largely at the mercy of the supplier of fuel in this regard. The question of contamination by dirt and other foreign matter goes hand in hand with that of dilution, and one cannot properly be considered without the other.

Oil Consumption

As a matter of interest it may be stated that the actual consumption of crank case oil for all the tests reported above averaged 0.00210 gallon per mile, which is equivalent to 476 miles per gallon.

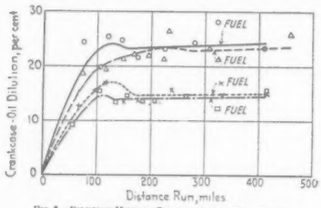


Fig. 2—Dilution-Mileage Curves for the Four Fuels

Desirability of Winter Fuels

Observations that the writer has had occasion to make indicate very clearly that the introduction of special winter fuels has met with widespread approval and is to be recommended. Here the factor of power-availability exerts a great influence.

In an attempt to obtain the views of automotive engineers concerning this and other phases of the fuel problem the writer recently communicated with a number of prominent men connected with the industry. O. C. Berry, Wheeler-Schebler Carburetor Co., in the following remarks emphasizes aagin several of the important elements that make special winter fuels desirable:

"I am strongly in favor of a special winter gasoline. The initial boiling point of this fuel should be as low as is consistent with the temperature for the particular season and State to which the fuel is to be sent. Any legislation imposing an arbitrary restriction on the petroleum industry relative to the initial boiling point of the fuel should be changed so as to make the laws conform to a scientific basis. For example, a carefully determined limit might be placed on the maximum vapor pressure the fuel may have at a given temperature. This would make the highest probable temperature for the season and locality the only limit to the volatility of the fuel that could be used.

"The desirability of more volatile winter fuel is indicated by the difficulty we have in starting cars in the cold weather. It is found desirable to design the carburetor to furnish mixtures with 10 to 15 times a normal amount of gasoline, or in other words nearly one pound of fuel per pound of air, in order that the engine may start easily. This excess fuel must be reduced gradually as the engine warms up, in order to get passably good performance. The driver finds this difficult to accomplish. The excess fuel causes crankcase dilution, carboned cylinders, valves and plugs, and is a serious source of engine trouble. More volatile fuels would aid greatly in reducing all of these defects and enable the driver to get much more satisfaction out of his car. To the best of my information it will not be necessary to change the end point, merely to put in a larger portion of the highly volatile fractions."

Operator's Viewpoint

The operator's point of view regarding winter fuels is well expressed by Professor W. E. Lay, University of Michigan, in the following extract from his letter:

"For a long drive across country one does not object to using the heavy fuel, but for operation in town, or delivery work, where constant starting and stopping are necessary, a fuel which vaporizes readily is helpful. We have such conditions in our town. Most of the companies sell two grades of fuel. For those of us who drive our cars a mile and a half and then allow them to stand until the engine is totally cold a fuel is available which will give us good engine operation in the shortest time and least crankcase oil dilution and trouble generally. For those who are going on tour when their engines will be kept continually warm, there is a fuel which will act just as satisfactorily as the more volatile fuel, and they are quick to take advantage of it. It is also available for trucks, buses or tractors, which are kept hot for a long period after starting."

Other Advocates

H. L. Horning, Waukesha Motor Co., E. A. Johnston, International Harvester Co., and others advocate the use of a special winter fuel with the initial point at 106 degrees F., the 20 per cent point at 187 degrees F. and the 90 per cent point at 358 degrees F.

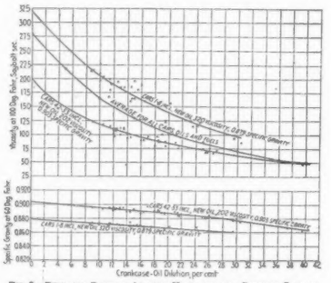


Fig. 3—Dilution Plotted Against Viscosity and Specific Gravity These Curves Represent Viscosity and Specific-Gravity Values at Various Percentages of Dilution for Two Groups of Cars Using Respectively the Oils of Highest and Lowest Viscosity when Fresh The Plotted Points Represent Averages for Four Fuels

Mr. Horning has been sufficiently interested in this question to make extensive observations relating to the influence of special winter fuels upon the use of cars belonging to the employes of his company. Those who did not use their cars at a particular time walked to their work. It is fully realized that the figures do not tell the whole story but there is, nevertheless, considerable interest in noting that for every 10 degrees F. drop in temperature below 70 degrees F. 15 percent fewer cars were used. Drivers showed great preference for the winter fuel, 55 per cent of all drivers in the shop having adopted the fuel whose characteristics are noted above and 17 per cent having adopted other brands of winter fuel within two months after their appearance upon the market. On a day when the temperature was minus 22 degrees F., 12 per cent of the cars, all using a special fuel, were present. In previous years, before the special fuels became available, no cars were present when the temperature dropped below minus 10 degrees F. Those who made the above observations believe that the availability of special winter fuels in the colder climates exerts a direct and important influence upon both the number of cars used and the number purchased.

Sulphur Content of Fuels

"Good Gasoline" was discussed at some length at the last annual meeting of the institute, and it was proposed that fuels satisfactory to automobile users should contain not more than 0.1 per cent of sulphur. It was believed that this amount in combination with the usaul quantities of water present in the crankcase should not cause undue corrosion and wear.

During the past few months, the fuels group of the Society Automotive Engineers Research Committee has made a survey of the sulphur situation, among car and engine manufacturers. The most recent returns from this survey indicate that the 0.1 per cent allowed by Government specifications is excessive. There was complete agreement that the majority of outstanding corrosion cases could be traced to the use of certain improperly refined blends that had been marketed by unreliable concerns. The survey indicated, however, that added attention should be devoted to this problem and that the sulphur content should be maintained as low as is consistent with practical considerations.

Dopes for Gasoline

Great interest is attached at the present time to the subject of fuel dopes, and it is believed worth while to present here a brief authoritative summary of the situation as it is viewed by an organization having at its disposal suitable equipment, and personnel qualified to establish the pertinent facts involved.

The Bureau of Standards has conducted extensive tests of dopes and doped fuels that are supposed to improve the performance of internal combustion engines. None of the tests made at the bureau has thus far shown that the use of these dopes produces any appreciable improvement in power or fuel consumption, provided no detonation was present when using untreated gasoline.

Such dopes as are beneficial derive their value from their influence upon detonation which results frequently in a loss of power, an increase in specific fuel consumption, and a tendency for the engine to over heat. Retarding the spark abnormally to avoid detonation may produce the same results. These consequences may be partially or completely prevented by the use of a dope that will decrease the tendency of the fuel to detonate. Insofar as the bureau is concerned, this is the only manner in which

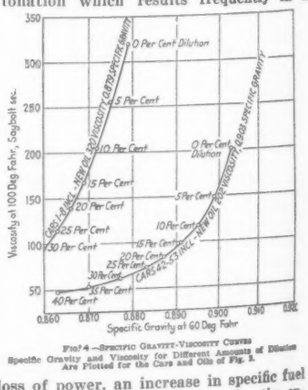
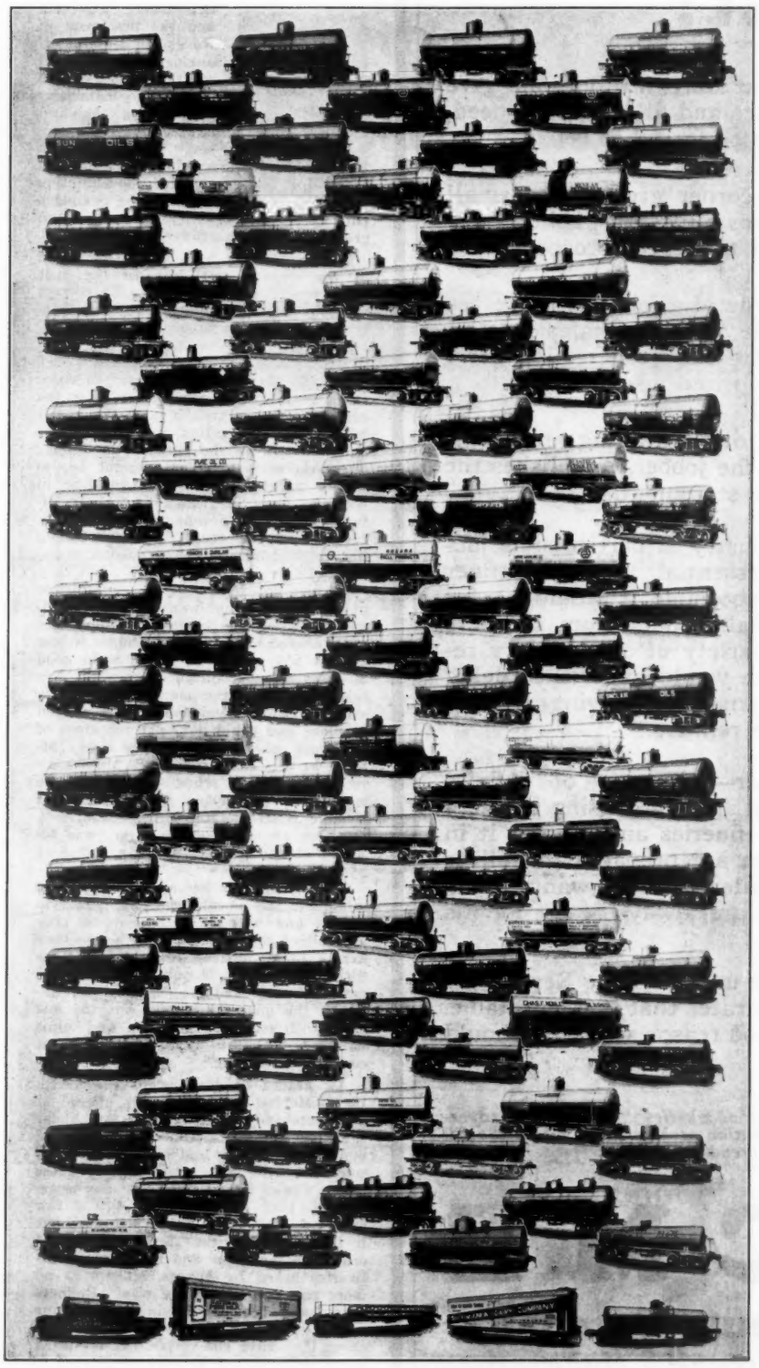


Fig. 4—Specific Gravity-Viscosity Curves Specific Gravity and Viscosity for Different Amounts of Dilution Are Plotted for the Cars and Oils of Fig. 3.

(Continued on Page 184)

100 Recent Orders
Totaling Over 8200 Tank Cars



These users chose "Car Foundry" cars because they are most profitable—most dependable in operation, most economical in upkeep, and most durable.

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December 18, 1924 THE OIL AND GAS JOURNAL

A Service Without Merit Cannot Last!

Even the largest store, if it does not give a definite service and fill a definite need, will eventually be forced to retire.

However, the corner grocer in a small town who proves himself a public necessity is entitled to expect prosperity.

The same is true of a jobber who serves as a warehouse for the wholesaler and a store-room for the retailer. His services are a recognized need.

The success of marketing methods, which include the jobber, establishes the validity of this statement.

In the Oil Industry in particular is jobber service essential. Every refiner knows how impossible it would be for him to fill small orders from retailers calling for a variety of oils. Every retailer knows he would experience delay and disappointment in buying from a dozen or more refiners.

The oil jobber—Acme—is of definite service to both. By purchasing oil from a number of refineries and storing it in large tanks, we are prepared to deliver oils to the retailer when he wants them. Our tank cars are always ready for his call.

The continued use of Acme Service by others demonstrates that it is profitable. This is one good reason why you should try it.

(This is seventeenth of a series of informatory advertisements on distribution problems with which the Oil Industry has to contend.

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OIL STORAGE PLANTS

Over 6,000,000 Gallons Storage

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37

CHICAGO SLOWING DOWN IN GASOLINE

Seasonal Slump in Consumption Causes Some Disturbance Temporarily. Kerosene Looking Better. Distillates Moving More Freely, Making Up for Gasoline. Fuel Oil More Than Holding Its Own

By J. B. Waldo

CHICAGO, Dec. 15.—The distribution of gasoline which ran so large during September, October and the first part of November dropped off during the latter part of that month and has been materially less during the first two weeks of December. There has been a slowing down of gasoline consumption all over the Standard Oil Co. (Indiana) territory although greatest in the northwest.

The result has been a slowing down in the demand not only in the spot market but on contracts. There are many jobbers who have purchased largely in anticipation of a tank wagon advance and their stocks are large. The contract jobber has been obliged to ask his refiner to hold shipments. In some cases at least the word came after the gasoline was in transit and the result has been some piling up of gasoline and a desire on the part of the refiner or marketer, as the case might be, to find a purchaser for the gasoline in transit. Cars in transit have been offered at less than refinery shipments, a reversal of the recent condition when the quick deliveries commanded a premium.

It has not been an easy matter to place these cars not wanted by the original purchaser and in one case four cars were offered to about every buyer in the city at 8½ cents. It would seem good business for some large concern to have taken them off the market but nearly every large office had some cars it wanted to place and could not. At the close of the week gasoline was being freely offered at 8½ cents for U. S. Motors direct to jobbers by refiners and sales were made at a less price. One of the most reliable concerns stated its bid of 8½ cents on an order not so large, was rejected as the buyer got his gasoline at 8¼ cents.

The feeling is rather anxious and some marketers say openly they are going to unload and will go to 8 cents if they are obliged to get business although they expect to be able to sell at not under 8¼ cents. There is only so much business to be had and the price will not increase the quantity bought but the low man will get that business and some will make almost any price when it comes to unloading.

All grades of gasoline have suffered. U. S. Motors has been freely offered at 8½ cents and the higher tests are under the same pressure. There were offers of 60-62 at 9¾ cents and of 64-66 at 11¼ cents reported and some claimed these prices could be shaded. It may seem strange that concerns sold out a few days ago had anything to sell now but it is because of the throwing back of orders on the seller and the delay in deliveries asked by buyers. There is no more gasoline than there was. Refiners that have been increasing their runs would do well to follow the example of those that have cut theirs. It is stated here that Cosden & Co., who increased to nearly if not quite 40,000 bbls. daily are now running not to exceed 30,000 bbls. The Cosden Sales Corp. has been a buyer for the past 30 days and if it wants to sell it has to buy. Last week they offered 8⅜ cents for any surplus their customers could spare, and bought some cars from several.

Kerosene and Distillates

Kerosene is looking up a little and is farily firm at 4½ cents. The demand is something better, partly because of the colder weather, but the export demand may have some part.

Distillates are moving more freely and the trade hopes what business it loses in gasoline it will make up for in distillates. The Empire Refineries is again offering its prime white distillates which it had sold out some weeks ago. Their prices are high by comparison for the gravity but the product just suits some of the burners that have to have a distillate with a low flash. There have been some lots of distillates offered at attractive prices by refiners who needed the tankage for other uses or to care for the runs from their stills but generally there has been a little pressure to sell and a very considerable local movement right along on contract. Some contract prices seem low by comparison with the spot market. There are quite a number of new burners on the market and several have gone back to the gravity feed principle which is saleable especially in the country towns. The local oil men as a rule are setting back and letting the burner makers learn what kind of oil to plan for.

Gas oil has shown considerable strength and the trade believes with the increased demand for gasoline the refiners who have been increasing their runs have been cracking more gas oil and have less to sell. Some of it is used for blending with heavier and even lighter oils to secure the desired gravity. There are no large contracts reported and the bulk of the spot demand is for small lots. Some are asking 3½ cents.

Fuel Oil

Fuel oil is more than holding its own although there is an undercurrent of opposition to the rise in price. Some oil men figure the larger the price for fuel oil the less need to move gasoline and the higher the price for which the refiner can hold. The backbone of the situation is the large demand by the sea and land transportation companies. The railroads are free buyers and the demand for bunker fuel is large. There is a good export demand. Although refiners have greatly increased their runs during the past month there is only a few thousand barrels of additional stock. Evidently refiners are disposing of fuel oil either by shipments on sales or through their cracking stills.

Dealers in fuel oil say demand is not large right now. The movement is from many small orders rather than large contracts.

It is commonly reported that Swift & Co. have turned to coal and other large users are contemplating the same thing. The cost of 24-26 fuel oil laid down in Chicago freight district is $2.07 a barrel and on the basis of 3 bbls. to a ton of coal, the equivalent to a ton of coal in oil costs $6.21 while good miner un coal is publicly quoted at $3 a ton laid down here and can be bought for less. Handling has to be considered and the exact point where the cost of oil is greater than the cost of coal to the buyer of fuel for heat units in quantities only is stated to range from $1 to $1.25 a barrel for oil. Some have already changed claiming the $1.10 price was their limit and others state they cannot afford to pay more than $1.25 with the present market for coal.

Lubricating oil is a disappointment right now is just about holding its own. The export trade is rather slow in this section although reports from Pennsylvania are that the export movement is large. The Gulf Coast refiners are said to be having a good shipping demand.

There has been no change in the tank wagon prices in the territory of the Standard Oil Co. (Indiana) and the softening of the spot refinery market is likely to defer any immediate change. The belief is it would do no real good and might do harm to advance prices before the beginning of the period of increasing demand in the spring.

Note these advantages
of the
G-R Twin Heat Exchanger

1—Has high salvage value because easily disconnected, transported and erected in new locations to meet changing conditions.

2—Is only half the length of a single unit for equivalent duty.

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Send the coupon for full information on this new heat exchanger for more efficient exchange of heat between crude oil feed stock and still bottoms, cold water and hot oil, or other liquids.

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Quart Oil Dispensing Jars

THE Quart Glass Jar is now the commonly accepted measure for dispensing oil at all progressive filling stations.

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Look for the "Diamond I" on Every Jar You Buy. It is a guarantee of accurate capacity, strength and sturdy serviceability.

SAMPLE OIL BOTTLES

Our seamless Oil Bottles of clear flint glass have rendered valuable sales assistance to the oil industry for many years. They are available in 2 oz., 4 oz., and 8 oz. sizes with ground and polished bottoms when specified.

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ALTON, -:- ILLINOIS

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EASTERN MARKETS CONTINUE FIRM; GRADUAL IMPROVEMENT EXPECTED

By N. O. Fanning

NEW YORK, Dec. 15.—Firmness prevailed in the eastern refined oil markets during the past week. There were no important changes in prices of any product, and the week was generally uneventful. At present more attention is being paid to the crude oil situation. As against optimism a week ago, the Mid-Continent now reports a wave of pessimism as a result of the discovery and development of the Wortham Field.

That the oil industry in this part of the country does not believe there will be a sharp upturn in oil prices, even next year, is evident from talks with leaders here. Notwithstanding they expect greatly increased consumption in 1925 and smaller production, the opinion is held that the margin between production and consumption will not widen to the extent that stocks will be drawn upon in a sensational manner. Therefore only a gradual improvement is expected with perhaps a moderate increase in prices, especially of gasoline and kerosene.

Leaders here point out that as crude oil is the industry's stock in trade, the oil business can get along better if run economically with an ample supply of crude in sight than with a scarcity of crude and runaway prices, which lead inevitably to extravagance in operation and overexpansion. That is not to say the industry is justified in continually adding to stocks. On the other hand, stocks are now believed to be too large, but a reduction of 20 per cent a year for the next two or three years would, in view of the expected steady gain in consumption, do the industry a world of good

Crude Moves to Refineries

There has been a heavier movement of crude under way from Mid-Continent fields to eastern refineries, most of which is moving by water. Receipts from the Gulf during the week ended December 10 averaged 306,000 bbls. daily, the largest since the week ended October 22 and comparing with a low of 184,000 bbls. during the week ended October 29.

On the other hand, receipts from the Pacific Coast continue on a smaller basis, averaging well below 100,000 bbls. during the last few weeks. Receipts from Mexico continue higher.

Effect on Eastern Markets

With the above situation in mind, eastern marketers are not expecting any violent changes in prices of any of the principal refined oil products in this territory in the near future, although minor changes may take place one way or another. At present there is a reluctance to raise prices of gasoline for fear of starting a new flood of production. The price of fuel oil cannot go much higher and still compete with coal. The demand and supply of kerosene remain so constant as to obviate sudden changes, although if the consumption of furnace oil keeps on increasing it may help kerosene prices.

Lubricants Bright Spot

The outlook for lubricating oil in this territory is brighter now than that for any other product. This is largely due to an unusually big export movement, with inquiries for foreign buyers coming in in large volume for 1925 delivery. Another factor is the unusually large home consumption in the motor trade and increase in industrial operations. But, of course, the biggest factor of all is that production is being held within reasonable bounds.

The situation as to paraffin wax is similar to that of lubricating oil. Foreign demand is heavy, especially in Europe.

Nevertheless, there has been no change in prices here during the last two weeks. The tendency is strong, however.

Reports persist of a coming increase in the price of both fuel oil and gas oil, due to the scarcity of heavy oil. Receipts of oil from Mexico, however, have increased to a marked degree, and fuel oil is coming in in larger quantities from the Gulf Coast. It is doubtful, therefore, there will be an advance other than a small one.

A further advance of one-quarter to one-half of a cent in the export price of naphtha featured the export market here last week. Motor gasoline (58-60) in cases and in bulk advanced one-quarter to 26.65 and 12.50 cents per gallon, respective, while naphtha advanced ½ cent to 14¾ for 59-61, 16 for 63-66 and 17½ for 66-68.

The export kerosene market is also stronger, with the movement gaining momentum. Shipments reported last week aggregated 6,137,083 gallons, of which nearly 60 per cent was shipped in bulk to European ports. Case shipments to the Far East, Africa and South America aggregated 2,144,040 gallons.

Case exports of gasoline increased to 1,908,690 gallons, compared with 1,533,400 gallons the previous week. Bulk shipments during the week ended December 10 amounted to 2,250,554 gallons.

Heavy shipments of lubricating oil and wax in barrels, largely to European ports, were reported during the week. Shipments of lubricants in barrels aggregated 1,105,188 gallons, while exports of wax in barrels reached 5,247 barrels.

Exports of paraffin wax in bags were also large, amounting to 1,443,860 pounds, against 828,300 pounds during the week ended December 3.

Principal Exports

The following table shows principal exports of petroleum and petroleum products from New York reported here during the past three weeks (figures in gallons unless otherwise noted):

Item and how shipped—	Week Ended Dec. 10	Dec. 3	Nov. 26
Gasoline:			
Bulk	2,250,554	.....	1,175,943
Cases	1,908,690	1,533,400	496,750
Kerosene:			
Bulk	3,993,043	.....	1,541,759
Cases	2,144,040	2,156,720	741,200
Gas oil:			
Bulk	186,764	2,402,422	.....
Lubricating oil:			
Bulk	.....	.....	773,940
Barrels	1,105,188	1,391,082	789,768
Cases	67,930	134,770	.....
Lub. grease:			
Barrels	.....	1,625	.....
Paraffin wax:			
Bags (lbs.)	1,443,860	828,300	1,753,620
Barrels	5,247	2,356	552
Crude oil:			
Barrels	.....	430	2,498

Shipments of paraffin wax included one of 176,000 pounds to Mexico.

Receipts Increase

Receipts of crude and refined oil at Atlantic Coast ports during the week ended December 10 are estimated at 523,000 bbls. daily, the increase from 476,000 bbls the preceding week being accounted for largely by increased receipts from the Pacific Coast. The latter averaged 90,000 bbls. daily, against 50,000 the week before.

Receipts from the Gulf Coast (largely Baton Rouge and Texas City) averaged 306,000 bbls. daily, against 299,000 the preceding week. Imports remained the same at 127,000 bbls. for each of the last two weeks.

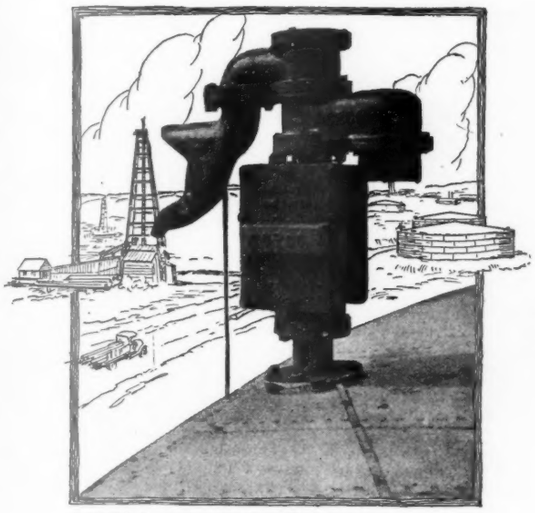
The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic ports from Gulf and Pacific Coasts of the United States, and imports, for the last three weeks; also monthly record for the last 13 months (figures in barrels):

	Dec. 10	Dec. 3	Nov. 26
Gulf Coast	306,000	299,000	253,000
Pacific Coast	90,000	50,000	55,000
Imports	127,000	127,000	98,000
Total	523,000	476,000	406,000

Daily Averages by Months

	Gulf	Pacific	Imports	Total
Nov., 1924	246,000	80,000	150,000	476,000
October	246,000	120,000	88,000	454,000
September	270,000	104,000	101,000	475,000
August	310,000	127,000	84,000	521,000
July	318,000	85,000	114,000	517,000
June	302,000	133,000	136,000	571,000
May	276,000	122,000	144,000	542,000
April	262,000	143,000	123,000	528,000
March	201,000	137,000	130,000	468,000
February	174,000	175,000	108,000	456,000
January	127,000	159,000	79,000	365,000
Dec., 1923	184,000	153,000	119,000	456,000
November	186,000	141,000	110,000	437,000

Imports are largely from Mexico, with an occasional shipment from Peru, Venezuela or Trinidad.



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You select good steel tank construction to conserve oil (really gasoline) and protect against fire. Such tankage, deserves adequate equipment—NOT ordinary vents and other wasteful tank openings. It pays to use OCECO Equipment which SAFEGUARDS your investment.

TO gaze out over an oil field or storage farm and observe the OCECO Vent Units is to realize that here the escape of costly gasoline vapors has been *blocked*.

Only when pressure reaches *one-half* ounce—and not *until then*—does any gas get out; and then only until excess pressure is relieved, when the vent again closes.

Consider the savings as compared with openings which continuously vent like a boiler chimney belches out smoke!

And the flame arrestor—a part of the unit—a fire fighter that never fails! Should the gases accidentally become ignited during venting not a spark could get back through the opening to endanger contents and tank.

The saving on gasoline that the OCECO Conservation Vent Unit effects pays for it in a comparatively short time—with the protection against fire thrown in for good measure.

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MEXICAN FIELDS

(Continued from Page 34)

1,200 feet; No. 121, in gray lime at 1,825 feet; No. 122 in gray lime with a showing of oil at 1,852 feet; No. 123, gassing in gray lime at 1,725 feet; No. 124 in a shell at 1,120 feet; No. 127, in gray shale at 540 feet; Nos. 130 and 135 in gray shale at nominal depths. In Lot 8 (Nacata), No. 112, drilling in gray lime at 1,910 feet. Mexican Sinclair Petroleum Corp.'s No. 75, Lot 2, is in the San Felipe at 1,385 feet, and No. 66, Lot 3 cemented 10-inch in the San Felipe at 1,177 feet. Mexican Petroleum Co.'s No. 19, Lot 1, is in lime at 1,720 feet. Transcontinental Petroleum Co.'s operation in Lot 4: No. 110 tested cemented 10-inch at 1,320 feet, and ready to resume; No. 134, in gray lime at 1,735 feet; No. 137 in hard gray shale with shell traces at 1,100 feet; No. 139, in gray lime at 1,720 feet; No. 142 fishing in gray shale at 1,040 feet; No. 143 will cement 10-inch at 1,200 feet in the San Felipe; No. 146, in gray shale at 1,050 feet, and, in Lot 5 No. 127 is drilling in lime at 2,110 feet with the hole full of oil and slopping over; No. 133 is in gray lime at 1,770 feet; No. 136 is in shale at 800 feet. In Lot 2: No. 132 is in lime at 1,840 feet. In the Paciencia, just north of Cacalilao, Transcontinental's No. 5 cemented 10-inch at 1,250 feet in shell; No. 12 has done the same at 1,200 feet, and No. 14 is drilling in gray lime at 1,680 feet.

Panuco

In the older sectors of the Panuco Field drilling operations follow: Credito Petrolero's No. 1, Lot 13 Lomas y Llanos, drilling in the San Felipe at 2,210 feet; No. 7, same lot, which will be an offset to the recently completed Gilliam well, is rigging; No. 4, Lot 15, drilling in gray shale at 1,500 feet, and No. 1, Lot 11, Tamanto, drilling in grey lime with a showing of oil at 2,147 feet. La Corona Petroleum Co.'s No. 82 San Manuel, the deep test, is drilling in the Tamasopa at 2,300 feet. East Coast Oil Co.'s No. 23 P. Zacate is drilling in gray shale at 1,435 feet; and No. 439 Ingenio in the same formation at 1,360 feet. Mexican Sinclair Petroleum Corp.'s No. 5 Tamanturo is drilling in blue shale at 260 feet. Cia. Pet. Meridional's No. 7, Lot 85 Halcon, is drilling in gray lime around 1,700 feet. National Oil Co.'s No. 12 Chijoles is drilling in gray lime at 2,010 feet. National Lines' No. 12 Barbarena (Federal zone), cemented 8-inch in a shell at 1,018 feet. Sol Oil Co.'s No. 1 Buena Vista (federal zone) cemented 8-inch in gray lime at 1,400 feet, and No. 1 Tampuche is ready to spud. Williamson and others' No. 1-B, Lot 4, La Canoa, is drilling in the San Felipe at 1,975 feet.

South Fields

In the South Fields, Huasteca Petroleum Co., (Mexican Petroleum) No. 49 Cerro Azul is drilling in gray shale and shell at 1,682 feet; No. 50 in brown shale at 865 feet; No. 51 in the same formation at 1,520 feet; No. 53 in basalt at 557 feet. Down in Tierra Blanca, Huasteca's No. 28 is in gray shale at 2,169 feet; No. 33 in brown shale at 1,055 feet. In Chapote Nunez its No. 9 is in brown shale at 1,335 feet; up in Grandilla, its No. 1 is in a sandy shale at 1,380 feet; Mexican Eagle Oil Co.'s No. 41, Lot 120 Amatlan, is drilling in gray shale at 1,802 feet; No. 43, Lot 260, rigging standard tools at 1,636 feet where the drill stopped in a hard shale. Agwi Companies (Atlantic Gulf Oil Corp.) No. 24, Lot 2 Chiconcillo, drilling in the San Felipe at 2,145 feet; Cortez Oil Corp.'s No. 8 Aguada, drilling in brown lime at 4,972 feet; and No. 11 is drilling in sandy shale at 1,956 feet; Mexican Sinclair Petroleum Corp.'s No. 14, Lot 226 Amatlan, drilling in shale and gumbo at 545 feet; Norris and others' No. 1, Lot 161 Amatlan, drilling in shale at 235 feet. South of Tuxpam River, Penn Mex Fuel Co.'s No. 27 Alamo is drilling in gray shale at 982 feet.

Ebano

Up in the Ebano district, Mexican Fuel Co.'s No. 29 Chijol is drilling in lime at 2,045 feet; in its La Dicha sector it is drilling as follows: No. 44 in broken lime at 1,795 feet; No. 52, drilling in blue shale at 715 feet, and one test is rigging and three waiting for cement to set around 8-inch as reported. In its Chapacao sector operations follow: No. 3, drilling in lime at 2,320 feet; No. 5 shut down temporarily at 2,170 feet in the Tamasopa; No. 6, cemented 10-inch in the San Felipe at 1,250 feet; Nos. 9 and 12 rigging. In its Mendez, No. 2 is drilling in the San Felipe limes at 1,280 feet and No. 3 in the same formation at 1,340 feet. In its San Pedro, No. 1 is drilling in shale at 955 feet; in Margaritas, No. 5 is drilling lime with hole full of oil at 1,827 feet. North of the Tamesi River, No. 1 Tancasneque is drilling in hard brown (Tamasopa) lime at 3,200 feet.

Corcovado

In the Corcovado district of the northern fields operations follow: La Corona Petroleum Co.'s No. 2, Lot 6, a derrick; No. 3, same, drilling in pink lime at 1,410 feet; Mexican Gulf Oil Co.'s No. 2, Lot C, drilling in a brown lime at 1,140 feet; No. 3, same, cemented 8-inch in gray lime at 1,182 feet; No. 5, Lot 4, a derrick. Powers and others' No. 1 Garruche-Corcovado, reported last week as a dry hole at 2,200 feet, will be deepened to 2,500 feet and is drilling out completion plug; No. 2, same, drilling around 1,880 feet in gray lime; No. 3, in gray shale at 1,325 feet; and No. 5, ready to spud. Tamasopa Oil Co.'s No. 1, Lot C, drilling in lime at 1,910 feet, and No. 2 cemented 8-inch in the San Felipe at 1,600 feet. There are seven more rigs getting ready to go or to resume in this sector.

Miscellaneous Northern Fields

At Los Esteros, American International Fuel Oil Co.'s No. 16 is drilling in gray lime at 1,312 feet.

In the Topila district, Cortez Oil Corp.'s No. 1 Cahuayotes is drilling in the Papagallos shales at 2,860 feet; East Coast Oil Co.'s No. 509, Lot 29 Tamboyoche, drilling in brown and white lime at 2,465 feet; Mexican Fuel Oil Co.'s No. 15 Santa Fe, drilling around 2,200 feet in gray lime, and No. 16, drilling in gray shale at 525 feet; National Lines, (Federal zone) No. 14 Paciencia de Aguacate, drilling in the San Felipe about 2,100 feet, and moving in for an offset test to the Gilliam well in Lot 13, Lomas y Llanos.

In the Marland Field, Cia. Franco Espanola, No. 15 Limon is drilling in shales and limes at 2,552 feet and No. 21 is drilling in blue shale at 710 feet.

In El Naranjo, International Petroleum Co.'s No. 1 is drilling in hard gray lime at 1,397 feet.

In the Tortuga, Morrison's No. 9 is drilling in gray shale at 1,235 feet.

In El Barco, Mexican Gulf Oil Co.'s No. 23 is drilling in gray and brown lime at 2,000 feet; No. 25 cemented 8-inch at 1,186 feet in gray lime, and No. 61, running 8-inch in the same formation at 1,386 feet.

ADVOCATES SPECIAL WINTER MOTOR FUEL

(Continued from Page 178)

a dope has been found to produce any appreciable improvement in either the power or the specific fuel consumption.

Carbon Removal

An accumulation of carbon in an internal combustion engine usually increases the tendency of the engine to detonate. Because a dope decreases the detonation, it is often supposed that it removes the carbon. As yet, the bureau has not in its possession convincing evidence that the use of any fuel dope has a pronounced influence upon the rate of carbon formation. This is by no means taken by the bureau as positive evidence that no such influence exists. The difficulties of controlling or evaluating the influence upon the rate of carbon formation of factors other than the quality of the fuel render the problem very difficult of accurate solution.

An improvement in fuel economy often accompanies the use of a fuel dope that actual tests show to be worthless. The

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gain results from adjusting the carburetor to give a leaner mixture when using the dope. The user in such cases is led to believe that the dope made better economy possible, whereas, with the lean mixture, the results would have been the same with the untreated fuel.

In further reference to the question of carbon removal above noted, attention should again be directed to the effect of continued running under load. Recent tests at the Bureau of Standard demonstrate that rather exhaustive studies are required for distinguishing between the results due to the use of a certain fuel or oil and those due to changes in operating conditions.

Summary

To summarize the points brought out by this miscellaneous discussion of factors that are associated with the fuel problem the following items may be mentioned:

1. Availability of power is the prime factor that governs the acceptibility of a fuel. This appears to be controlled by the 14 to 20 per cent range of the distillation curves for fuels used in the tests cited. Small temperature differences in this range apparently have an important effect upon the power availability.

2. In the matter of crankcase oil dilution, which is apparently governed by the upper part of the distillation range, the average motor vehicle operator has no effective and ready means to warn him of impending difficulties that may arise from excessive dilution. He is thus largely at the mercy of the fuel supplier in this regard.

3. From the operator,'s standpoint special winter fuels are appreciated and are highly desirable.

4. From a recent survey of the sulphur situation it appear that 0.1 per cent sulphur content allowed by Government specifications should be given further study.

5. Bureau of Standards tests have shown that none of the fuel dopes thus far studied have produced any appreciable improvement in power or fuel consumption, provided no detonation was present when using the untreated gasoline. Dopes that are beneficial derive their value from their influence upon detonation.

6. Bureau of Standards tests have further shown that the influence of running an engine under load is marked insofar as the removal of carbon deposits is concerned.

7. The most outstanding fuel problems are of common interest to automotive and petroleum engineers alike, and can best be handled through concerted effort. The primary object should be that of maintaining a proper balance between the automotive equipment and the available fuel.

CALIFORNIA FIELDS

(Continued from Page 44)

ing list at Long Beach during the past week and two others returned to production after being redrilled and cleaned out. The Shell finished an unusually good well in No. 4 Patton-Wilson and increased its daily production 835 bbls., the oil testing 26.2 degrees and showing a cut of 3 per cent. It was brought in from the 5,000-foot level after being finished with a 5¼-inch oil string carrying 955 feet of 60-mesh screen. There are now four wells on this property making a little better than 2,300 bbls. a day., the greater majority coming from three deep producers. No. 1, the smallest and shallowest, is flowing a little less than 150 bbls. a day from 4,388 feet. The company has an unusually good looking prospect in No. 20 Alamitos now at 4,764 feet and indications point to a good completion within a few days.

No. 1 Special Delivery of the Bay Hills Oil & Land Co. was the biggest surprise this field has had for some time. It is practically surrounded by water wells and production troubles but, notwithstanding, the company went into the hole, which has been standing idle since January and, after cleaning it out, brought in a 560-bbl. producer. The company drilled to 4,300 feet last year but upon encountering bottom water, plugged back to 3,950 feet. It is interesting to note the results attained by this cleanout job in a hole which has been standing idle for the greater part of a year. There is one disconcerting feature about this rejuvenated well which is causing a little anxiety, the apparent increase in water present in the production during the past few days. Original tests showed the gravity of the oil to be 23.5 degrees and the cut 3 per cent. Yesterday's test showed the gravity to be 23.2 degrees and the cut 12 per cent. Should this free water continue to increase, it will of course render the production unsatisfactory but, if it does not increase, it will probably result in the plugging back of the company's other three holes, all in an unsatisfactory condition because of the large amount of water present.

The Mutual Oil Co. returned No. 1 to production after cleaning it out to bottom, 4,850 feet, and secured a 175-bbl. pumper of 21.5 gravity oil, which cuts 15 per cent.

Huntington Beach

At Huntington Beach, George F. Getty was successful in plugging back No. 1 Cady Walker from 3,800 feet to 3,242 feet. The cement plug was a good one as evidenced by the comparatively clean oil. When put back on the beam it made 110 bbls. of 23.9 gravity oil with a cut of 1.2 per cent. Judging by indications, the next well to be put on production at Huntington will be the Standard's No. 3 Mills, which looks very good at 4,400 feet. It is being finished with a 6¼-inch oil string, which, it is believed, will be landed at 4,385 feet.

Miscellaneous Drilling

The Standard is making a water test on No. 15 Temple at Montebello and if a shutoff has been effected the company will undoubtedly increase the field's list of producing wells during the coming week. Judging by indications it should be good for at least 1,500 bbls. In No. 62 Baldwin there is a possibility this 4,322-foot hole may result in substantial production. The Pan-American has filed abandonment notices on Nos. 1 and 2 Pasadena in the Montebello Field and will probably begin salvaging operations.

The Standard has begun work on three new holes at Coyote by erecting rigs for No. 40 Emory, No. 101 Murphy and No. 102 Murphy. The latter is a steel rig. No. 100 Murphy is still standing cemented at 4,153 feet but should be drilled out next week. The Jameson Oil Co. has secured considerable acreage in Little Bear Canyon and will attempt to develop surface production expected around 800 feet. The company is hauling in material for the first rig and has already installed the boilers. It is expected the first hole will be spudded in during the next two weeks. The company's operations are attracting attention because of several nearby seepages of what is reported to be 20 gravity oil. The first attempt to intercept this upper strata will be with cable tools.

The Chicksan Oil Co. has just about finished the rig for No. 2 Bradford at Richfield and will probably spud in within 10 days. The company's first well has settled down to 475 bbls. of clean 21.2 gravity oil. Usually operators are disappointed at a quick decline in production but in this instance the drop was accompanied by a big reduction in water present. The 475 bbls. of clean oil which the hole is producing is far more desirable than the larger initial production of dirty oil upon completion. The Chanslor-Canfield Midway Oil Co. is making preparations to deepen No. 1 Bradford, an offset to the Chicksan Oil Co.'s No. 1 Bradford, to the deep sand. The Chanslor's No. 1 Bradford has been producing from 4,117 feet for some time and after the 4¾-inch is pulled it will be carried down to 4,700 feet.

The Mutual Oil Co. is abandoning No. 1 Keoughan, east of Yorba Linda, after going to 5,395 feet. A core sample showed the formation to be standing at an 80 degree angle. The recent success which the Union has had on its Hole lease has led to an experiment with one of the Chapman wells at Richfield. No. 15 Chapman will be plugged back from 4,500 feet

(Continued on Page 190)

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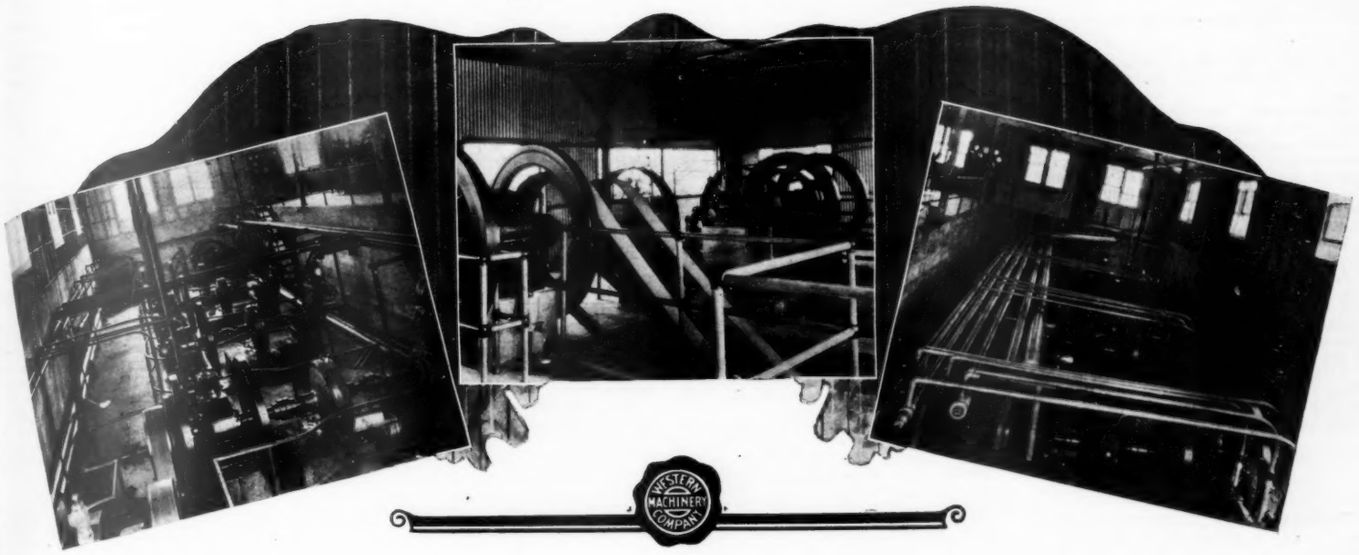

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140 ACRES—Oil lease on geologically approved structure in line of development in Okfuskee County, Oklahoma.. Exceptional opportunity for company or individual that wants to get oil. Quick action necessary as this will not last long. Write or wire, Dr. E. J. Angle, 407 Funke Building, Lincoln, Nebr.

GOOD OIL LEASES

Skilled oil men who desire to secure large acreage oil leases, with low royalties, on lands in Wyoming held and owned outright under old seasoned incontestable U. S. patents; free from all National Government or State royalties or interference or litigation, and in the best largest oil field in Wyoming, in the same identical geological structure where huge high grade oil production has been going on for 15 years and will surely continue for 20 years to come; are invited to communicate with the sole lessee, James D. Negus, 104 South Centre St., Casper, Wyo.

DOME DEVELOPMENT by use shallow test rigs at small expense draws claws from wildcatting, reducing the costs of prospecting to sound business basis. Method endorsed by highest authorities. Now operating. Desire business men to investigate with view of investing. James W. Rich, Oil Operator, 401-2 Bankers Mortgage Bldg., Houston, Tex.

BIG CREEK oil field 25-acre lease for sale. Only close-in lease on market. Near drillings. Address M. H. Rogers, 1204 West Drew Ave., Houston, Tex.

FOR SALE — 15,200 acres Montana land with 95 per cent oil rights; 85 per cent of land tillable. Near good town and railroad. Can give clear title. Land lies in oil structure. Can furnish geology. Owner will take $9 per acre for quick sale. Box A-537, The Oil and Gas Journal, Tulsa, Okla.

110-ACRE lease for sale. Price for quick action, $10 per acre. Address Box 300, Duncan, Okla.

FOR LEASE—200 acres and more for gas or oil located 40 miles below New Orleans. S. R. Gabel, Nero, La.

ATTRACTIVE BLOCK, solid, University lands, Crockett and Reagan Counties, for sale or drilling. P. R. MacIntosh, 215 Neil P. Anderson Bldg., Fort Worth, Tex.

AT BIG CREEK oil field, southeast side of dome, I have financed one drilling; want to interest parties to finance another drilling on my 10 acres adjoining. Will personally superintend operations. James W. Rich, Oil Operator, 401-2 Bankers Mortgage Bldg., Houston, Tex.

NEW MEXICO OIL LEASES

We still have some very desirable selections in ten counties at 25 cents per acre.

Perfect title and very low rental.
For maps and particulars write us.
NEW MEXICAN EAGLE OIL CO.
Sapulpa, Okla.

OIL PROMOTER, needing cash, will sell one-sixth interest in wildcat near Glasgow, Mont.; 10,000 acres, on structure blocked solid. Splendid report and map by Mutual. About to be drilled. Under contract you will receive share in royalties averaging 4 per cent on 5,000 acres of top acreage. For quick deal will take $2,000. Should appeal to a real oil man. H. H. Waldron, Froid, Ont.

FROM NOW ON, When I want to do business with the real men of the petroleum industry, I'm going to put my advertisement right here in this Classified Wants Section.

25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

MAIL your advertisement now. It will be published next week. Cash with order.

FOR TRADE

FOR TRADE

Good Oklahoma farm, half mile from production to trade for standard string of tools and casing for 3,500-foot test. Address Box D. D., The Oil and Gas Journal, Tulsa, Okla.

PAINTS

3,000 GALLONS Blue Sublimed Lead paint made on the following specification: 52 per cent Blue Sublimed Lead, 48 per cent Pure Boiled Linseed Oil. Good for priming or repainting on wood or metal—sample on request. Will sell any or all at bargain. Write W. H. Hoover, 4917 Main St., Kansas City, Mo.

FOR SALE—EQUIPMENT

PIPE FOR SALE

We offer the following used gas line pipe for sale:

3 miles 3-inch
15 miles 6-inch
10 miles 8-inch
32 miles 10-inch
7 miles 12-inch
5 miles 14-inch

Write us for prices.

BAUR GAS CO.
Eaton, Indiana

PIPE

All Sizes, Rethreaded, Coupled, Ready for Use; Immediate Delivery
Absolutely Guaranteed
D. WOLFF & SONS
213-23 So. Fourth St. St. Louis Mo.

CASING

A-1 second-hand; threads and collars guaranteed. 5,000 ft. 12½ inch 50 lb. and 5,000 ft. 10 inch 35 and 40 lb. Also other sizes and weights. Write us.
SHEFTS SUPPLY
Morris, Okla.

BESSEMER Gas Engines, 15- to 165-h.p., other makes 300-h.p. Oil and gas and steam engines, compressors, generators, complete gasoline plants. R. W. Russell, St. Marys, W. Va.

"Buy Christmas Seals"

FOR SALE—At Yale, Tanks, Boilers, Stills, Loading Rack and Land at junk prices. Write P. O. Box 747, Yale, Okla.

FOR SALE—Complete standard string tools from 15½ in. down to 6⅝ in. Address J. G. Hunt, 1217 Johnstone Ave., Bartlesville, Okla.

LINE PIPE

For immediate shipment, we offer the following first-class used line pipe:

10 miles 2 inch
12 miles 3 inch
13 miles 4 inch
15 miles 4 inch (new)
12 miles 6 inch
4 miles 8 inch
4 miles 10 inch

Also in position to furnish various sizes of one-run casing.

PLAIN END PIPE FOR GAS LINES

50 miles Odee plain end pipe, 3 in. to 6 in. in diameter, in double joints of 35 to 40 ft.; guaranteed in first-class condition. Our prices will enable you to effect a saving of about 50 per cent and cut your installation cost in half, by reason of the double joints.

JOS. GREENSPON'S SONS IRON & STEEL CO.
Department O St. Louis, Mo.

FOR SALE — Drilling machine and tools complete. "No. 2 National" in perfect condition. Tools also in first-class condition. Ready to drill well. Location, Mingo Junction, Ohio, near railroad. Standard Pipe & Supply Co., Box 509, Phone 870, Marietta, Ohio.

FOR SALE—EQUIPMENT

A BARGAIN—Practically new 10-ton Holt Caterpillar and three Troy Trailers all in A-1 condition. Address Box 82, Morris, Okla.

AT A BARGAIN PRICE—2,400 feet of 6⅝-inch well casing, 27 lbs. per foot; 120 feet 8⅝-inch well casing; 60 feet of 12¾-inch, and 2,200 feet of tubing and rods; 100-bbl. tank; 600 feet of line pipe. Working barrel, casing head, standard derrick complete. Will price f.o.b. car, Liberty Center, Ohio. Write C. R. Ulrich Co., 736 Nicholas Building, Toledo, Ohio.

MACHINERY

Milling machine, No. 4 Cincinnati Universal, used D. B. G., all feeds, all universal attachments. A real bargain. Elliott & Stephens Machinery Co., St. Louis, Mo.

FOR SALE — Three Bessemer gas engines, 25 h. p., first-class condition. Straight clutch. Priced to sell. Ready to load. Standard Pipe & Supply Co., Box 509, Phone 870, Marietta, Ohio.

For Sale
OIL ENGINE UNIT

One 150-KW Fort Wayne compound wound direct current generator, 250-volt, 600 amperes, 164 R. P. M., direct connected to.

One 225-h.p. Busch Sulzer Diesel vertical oil engine, 3-cylinder, size 16-inch by 24-inch.

THE NATIONAL POWER MACHINERY CO.
1911 Scranton Road Cleveland, Ohio.

FOR SALE

5-inch extra heavy
new steel pipe
(National Tube make)
at very attractive prices
Box C. N., The Oil
and Gas Journal, 30
Church St., Room 547
New York City, N. Y.

FOR SALE

20 miles of second-hand 6-inch line pipe as good as new. Good threads and couplings. For further particulars address

OHIO IRON & SUPPLY CO.
Lima, Ohio.

FOR SALE

Two 32-h.p. Pattin Brother gas engines, complete with magneto ignition; can be seen running close to Tulsa; $700 each.

One 7-12x13x10 cross compound Worthington expander with Laidlaw valve. New condition, cost $3,550, f.o.b. factory, will take $1,500.

Two 60-h.p. Bessemer gas engines, $350 each.

Two 70-h.p. Bessemer gas engines, $350 each.

SOUTHLAND GASOLINE CO.
Box 1027 Telephone 9227
Tulsa, Okla.

FOR SALE—Twenty 500-bbl. steel bolted tanks, second-hand, but all in excellent condition. Will sell all or any part of these tanks for $250 each. Tanks now located in northwest field, Burkburnett. W. F. Hendren, 521 Staley Bldg., Phone 5900, Wichita Falls, Texas.

FOR SALE—150 feet of 70-pound 15½-inch; 1,000 feet 40-pound 10-inch; 2,700 feet 8¼-inch 32-pound 8-thread and 3,400 feet of new 24-pound 6¼ 1-inch 10-thread J. & L. Woodlawn. Special casing; 100,000 feet of 2-inch line; 20,000 feet of 2-inch tubing and rods; also excellent powers, engines, tanks and other equipment. J. F. Arnold Co., Decatur, Ind.

FOR SALE—EQUIPMENT

BARGAIN
Slow Speed Motors

Two 200-h.p. new 235 R.P.M. Westinghouse electric motors at fraction of original cost.

STANDARD ELECTRIC MACHY. CO.
9 E. Hill St. Baltimore, Md.

FOR SALE—Three sets 5-inch Ideal Rig Irons at bargain. The Western Iron & Foundry Co., Wichita, Kansas.

FOR SALE—complete string of oil well drilling tools and 5-inch Parkersburg rig irons. Bits from 18-inch down to 4¼-inch. Everything first class. Arkansas delivery, write or wire. St. Louis Exploration Co., 5790 Kingsbury Place, St. Louis, Mo.

For Sale
GAS ENGINE UNIT

One 250-KW Crocker-Wheeler compound wound direct current generator, 250 volts, 3-wire, 225 R.P.M. direct connected to.

One 250-h.p. Bruce-MacBeth 4-cylinder gas engine.

THE NATIONAL POWER MACHINERY CO.
1911 Scranton Road Cleveland, Ohio

TANK TABLES

TANK TABLE COMPUTATIONS

Have your tank table computed by Tank Gauging Engineer. Tables guaranteed. $2.50 to $5 per tank. White cloth prints, 75 cents to $1.25 each; blue prints, 25 cents to 75 cents each. Mail strappings and instructions to G. E. Smith, 1612 W. Huisache, San Antonio, Tex.

FOR SALE—REFINERIES

FOR SALE — Good small refinery in El Dorado, Kans., priced low for quick sale. A. F. Williams, Box 28, El Dorado, Kans.

MACHINE WORK

RIDLEY MACHINE WORKS—Repairing and building of all kinds of machinery; patents perfected; welding and gear cutting; automobile parts made and repaired. Jefferson and Southwest Blvd., Phone Harrison 5924, Kansas City, Mo.

POSITION WANTED

SINGLE MAN, acquainted in Mid-Continent territory and leases, familiar with production supplies and tools, knowledge of Spanish, can go anywhere, excellent references. A. G., Box 781, Phone 3-1695, Tulsa, Okla.

GENERAL CONSTRUCTION foreman, familiar with all classes of concrete foundation work and machinery installation; steel, brick and wood construction; general pipe work, pump stations and gasoline plant construction. I will demonstrate my ability with any reliable company before taking up the matter of salary I shall receive. Box A-536, The Oil and Gas Journal, Tulsa, Okla.

TAX ACCOUNTANT—Accountant experienced in ad valorem tax appraisals and levies, wishes position with oil company. References given. Address Box 602, El Dorado, Kans.

"Buy Christmas Seals"

HIGHLY COMPETENT natural gasoline man, construction, operation, maintenance, open for position January first. Construction preferred, references. Box A-535, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

WANTED — Representative for Mid-Continent Field; must be experienced. Reply stating past and present positions, salary expected and full details in first letter. Reply, Rope, The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

WANTED—Lubricating oil salesman. One who is capable of producing results. In answering, state age, experience and whether married or single. Write Post Office box 1561, Tulsa, Okla.

EXECUTIVES, ENGINEERS, now earning $3,000-$25,000 will find our individual, confidential service a dignified and effective medium to make desired connections. Personally conducted by Mr. Jacob Penn, the eminent employment authority, known to leading business men throughout America. Not employment agency. Jacob Penn, Inc., 305 Broadway, New York City, N. Y.

WANTED—Refinery Superintendent capable of making gasoline, naphtha, kerosene, distillates, lubricating oils, greases, fuel oil, etc. Box A-530, The Oil and Gas Journal Tulsa, Oklahoma.

SALESMEN calling on drilling and producing trade, gasoline plants, and pump stations, offer a high class profitable line with established trade. Territory North Texas, Southern Oklahoma, Louisiana, and Arkansas. Would consider placing as side line. Strictly commission. Give reference and past experience. Box A-534, The Oil and Gas Journal, Tulsa, Okla.

WANTED

WANTED—Producing royalties. Oklahoma and Kansas. Give full details. P. O. Box 502, Independence, Kans.

WANTED—Blocks or offset acreage on structure. Must stand close investigation and will deal only with principals. Submit maps and all data. Box A-460, The Oil and Gas Journal, Tulsa, Okla.

WANTED

Large operating company wants block of acreage for test well. Submit your proposition in detail. Albert A. Beymer, Geologist, 10 Carlile Palace, Pueblo, Colo.

WANTED—Second-hand line pipe and casing for spot cash. Phone or write Jay Kornfeld, 1338 South Owasso, Tulsa, Okla., Phone 5411.

BROKERS to handle Eastern New Mexico leases. Excellent geology. Also Archer, Vernon, Olney and public utility offerings. W. A. Smith, Waggoner Bldg., Wichita Falls, Texas.

WANTED—An absorption gasoline plant with production from 1,000 to 2,000 gallons. Box A-532, The Oil and Gas Journal, Tulsa, Okla.

WANTED—To buy a Star No. 28, No. 30 or National portable drilling rig. Outfit must be first class and price low. Give full description and lowest cash price in first letter. Box A-538, The Oil and Gas Journal, Tulsa, Okla.

WANTED—One or more associates to help me finance drilling several shallow and deep test wells in semi-wildcat fields. Have leases and permits on 288,000 acres. Some patented land balance Government lands. Situated Texas, Utah, California, Oklahoma and Kansas. Some big companies willing to drill on overriding royalty willing to let them have play; prefer to have closed corporation and test out several choice locations and if we hit to then sell well and some acreage. Big operator write me. Box A-539, The Oil and Gas Journal, Tulsa, Okla.

WANTED — Information regarding zinc, lead, antimony, bauxite, gold and silver deposits, and oil structures in Oklahoma and Texas. Box A-463, The Oil and Gas Journal, Tulsa, Okla.

WANTED IN NORTHERN TEXAS

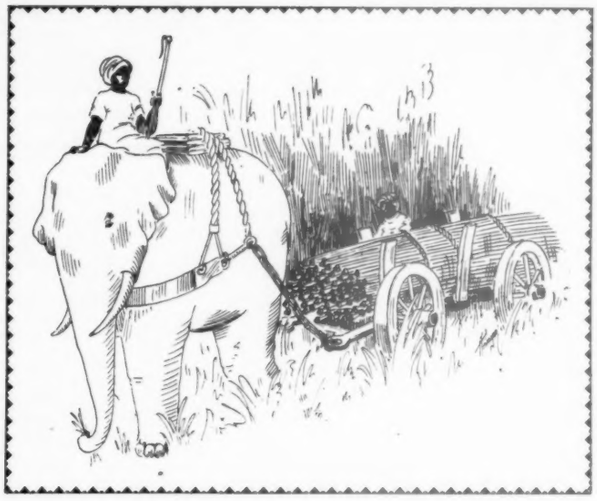
Blocks or offset acreage on structure, must stand close investigation and will deal only with principals. Submit maps and all data. Box A-521, The Oil and Gas Journal, Tulsa, Okla.

ORCHARDS AND FARM LANDS

EIGHTY ACRES, well improved, irrigater Colfax County, New Mexico; clear, water rights paid; trade for something closer here. Owner, Rees, 4020 E. 27th, Kansas City, Mo.

Additional Classified Advertisements on Page 204

293 Bedell Bldg., San Antonio, Tex. Deere Bldg., Dallas, Texas. Whittle, Knoxville, Tenn. Wallis Section.



Over in India and wherever oil is found

COLUMBUS SUCKER RODS are always on the job to insure steady production

ALL "COLUMBUS" box and pin or California style oversize couplings shoulder up in tool-joint fashion. Accurate machining of the threads, which are centered with the rod, together with the square machined shoulder forces an even pull at all points—reducing the breakage of pins to a minimum. The carefully selected steel combined with highly skilled workmanship insures a high quality rod.

Ask Your Dealer—or Write

The Columbus Sucker Rod Co.
Columbus, Ohio, U. S. A.

"Columbus" SUCKER RODS

Columbus Sucker Rods starting on their way to the far corners of the earth

CONFERENCE ON SHALE HELD AT WASHINGTON

WASHINGTON, D. C., Dec. 13.—The means for future production of oil from Government reserves of coal and oil shale is the subject of a conference being held at the Interior Department by technologists of the Navy, Bureau of Mines and Geological Survey. A research program to aid commercial development of processes by which oil may be obtained from oil shales, lignite, and other coal is being planned by the Bureau of Mines. The Navy is represented in the conference by Rear Admiral H. H. Rousseau, Commander N. H. Wright, and Lt. Commander W. H. Osgood. The Geological Survey is represented by Dr. David White, W. T. Thom, Jr., fuels geologist, and W. H. Bradley, oil geologist. O. P. Hood, chief mechanical engineer, in charge of the Fuels Division of the Bureau of Mines, presided.

A report was made upon recent research in foreign countries by A. C. Fieldner, superintendent of the Pittsburgh experiment station of the Bureau of Mines, who has just returned from a trip of inspection through European laboratories and carbonization plants. Reports were also rendered upon recent research in the fuels and petroleum laboratories of the Bureau of Mines.

OKLAHOMA FIELDS

(Continued from Page 40)

SW NE, Section 3-18-16, was dry at 1,055 feet.

Burwell and others' No. 1 Thompson, SE cor. 9-18-16, was producing 7,700,000 feet of gas from sand at 1,130-35 feet. Winters and others' No. 1 W. Bird, C S half NW NE, Section 9-18-16, found a gas sand at 675-80 feet, and was producing 3,000,000 feet. Burwell and others' No. 1 Kelly, SW cor. Section 10-18-16, was dry and abandoned at 1,180 feet.

James Lugg's No. 1 Hakey, SE cor. NW NE, Section 3-7s-7w, in Jefferson County, was abandoned at 2,721 feet.

The Broken Arrow Gas Co.'s No. 1 Perkins, SE cor. SE NE, Section 15-18-14, Tulsa County, was getting 500,000 feet of gas in sand at 1,312-18 feet. Bob Hall and others' No. 1-A Childers, NW cor. NW NE, Section 3-17-14, had a good show of oil at 1,424 feet in sand topped at 1,418 feet.

The National Drilling Co.'s No. 1 Walker, C SE NE NE, Section 36-21-12, was deepened for 3,000,000 feet of gas from sand at 1,775-89 feet.

P. Briscoe's No. 2 Reed, CWL NW SW, Section 25-5-8w, Grady County, found a gas sand at 2,136-2,461 feet, and was making 38,000,000 feet. The Oklahoma Natural Gas Co.'s No. 2 Ready, NW cor. SW SW, Section 2-4-8w, was producing 4,000,000 feet of gas.

The Sun Ray Oil Co. and others' No. 2 Chandler, NW cor. SE SW, Section 26-5-8w, was drilling at 60 feet. The Carter Oil Co. is rigging up a rotary for No. 1 Dryden, C NE SW, Section 2-4-8w.

Sholom Alechem

In the Sholom Alechem Field of Carter County, Simpson & Fell's No. 1 Cassidy, C SE SE SW, Section 27-1s-3w, was dry and abandoned at 3,600 feet. The Tidal-Osage Oil Co.'s No. 2 Parsons, C NE SW NE, Section 28-1s-3w, was getting 150 bbls. nautrally from sand at 3,348-85 feet.

The Amerada Petroleum Corp. has three new wells in southern Carter County; No. 6 Criner, NE cor. SE NE, SW, Section 20-5s-1, topped sand at 1,238-54 feet, and was swabbing 40 bbls. No. 2 Clay, SW cor. NW SW NE, Section 28-5s-1, 140 bbls. nautrally from sand at 1,111-23 feet.

New operations in the Sholom Alechem area of Carter County, include Westheimer & Daube's No. 1 Newstaff, SW cor. Section 27-1s-3w, drilling at 300 feet; Humble Oil & Refining Co.'s No. 2 Hales, C NE SE SE, Section 28-13-3w, spudding at 120 feet; the same company's No. 3 Lusk, C SW SW NE, Section 33-1s-3w, drilling at 1,350 feet; Magnolia Petroleum Co.'s No. 1 McClish, C NW NE SW, Section 34-1s-3w, rigging up. The Coline Oil Co.'s No. 6 Pierce, C NE NE SE, Section 12-2s-3w, Graham district, was drilling at 360 feet.

CALIFORNIA FIELDS

(Continued from Page 186)

to 3,440 feet and the 8¼-inch perforated just above this point in an effort to secure production from this upper zone.

Operations at Newport

Maier, Harris & Yerkes were successful in completing No. 1 at Newport from the 1,100-foot level and, accompanied by the usual pumping difficulties, finished what will possibly be a 25-bbl. well of unusually low gravity oil.

The Manhattan Pacific Oil Co.'s wildcat near Hermosa Beach, after being held up because of a bad cave, is drilling ahead, the depth being 2,780 feet.

Seal Beach

It has been reported on good authority the Shell has ordered three more steel rigs to be erected at Seal Beach within 30 days. At present the company has a 5,625-foot hole in No. 1 Bixby, a small dirty pumper in No. 1 Bryant and a 3,700-foot hole in No. 2 Bryant.

Union Oil Co. put No. 1 Wisecarver on a production test at McKittrick and secured a 25-bbl. pumper, the oil from which is reported to test 29.4 degrees. The hole was originally drilled to 4,835 feet but the present production is coming from the 4,000-foot level. The high gravity of the oil is attracting attention as this district is known for its heavy oil. The Wisecarver, however, is considerably deeper than any of the other producers.

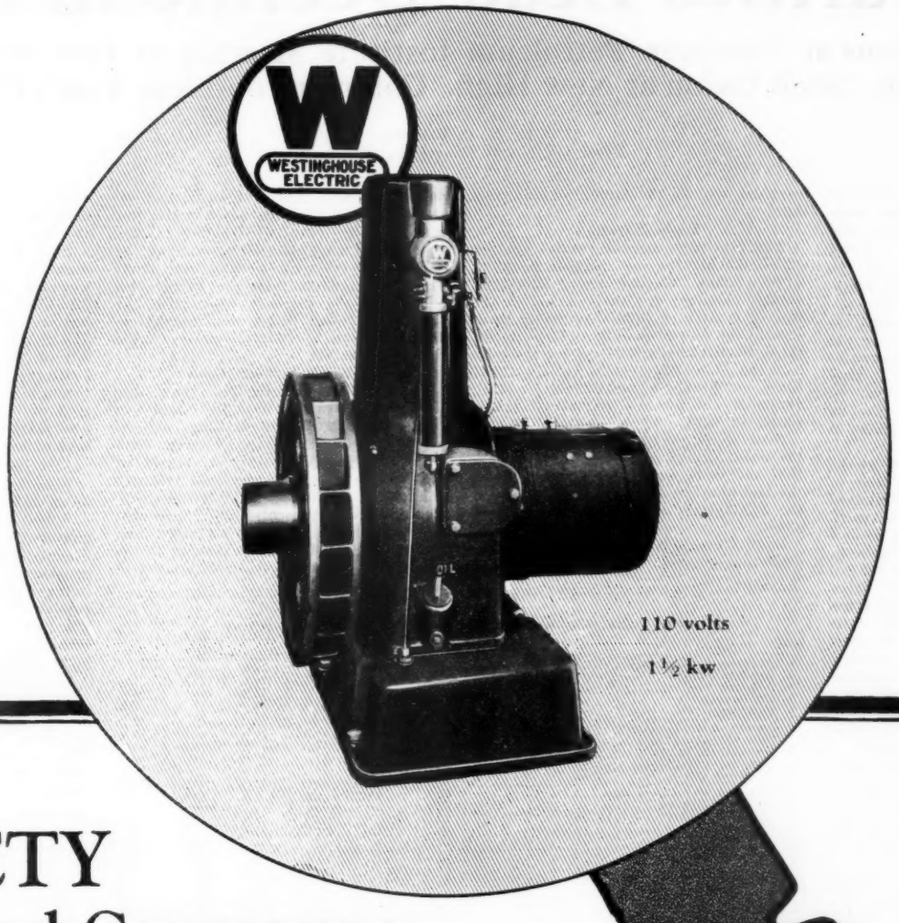
The Pan-American now has the deepest test on the Kern River Bluffs south of Bakersfield and its No. 1, Section 13-29-29, shows 4,002 feet of hole. The St. Helens, Section 14-29-28, is standing cemented at 3,000 feet. Water broke in on the Central's wildcat, Section 36-28-28 at 2,487 feet and, although work has been temporarily suspended, it is the intention to recement and resume work shortly. The Marland has started work on its second well on the Kern River front, Section 36-28-28, and a small pumper can be expected.

Field Operations

Oil field operations reported to the State Oil and Gas Sueprvisor show 19 new wells started, compared with 21 during the previous week, bringing the total for the current year to 1,282, compared with 1,328 at the same time last year. Of the 19 notices to drill filed this week, 6 were for wells in the Rosecrans Field, 1 each at Torrance, Dominguez, Huntington Beach, Inglewood, Richfield, Los Angeles County, San Luis Obispo County, Yolo County, 4 in the fields of Kern County, and 1 in the Post Hole Paradise at Conejo. There were 36 tests of water shutoff made, compared with 21 during the previous week. Deepening or redrilling jobs totaled 32 and abandonments 18. Permits were granted for the following new wells:

Torrance
Location, Company, Well—
General Pet. Corp.—
8-4-14 Carson 5.
Rosecrans
Barnsdall Oil Co.—
18-3-13 O'Dea 3.
Petroleum Midway Co., Ltd.—
7-3-13 McCormick 1.
7-3-13 Baskin 1.
Sentinel Oil Co.—
7-3-13 Athens 2.
7-3-13 Athens 3.
7-3-13 Walter H. Fisher Corp. 5.
Dominguez
Shell Co.—
33-3-13 Reyes 22.
Huntington Beach
Standard Oil Co.—
34-5-11 Bolsa 19.
Inglewood
Standard Oil Co.—
8-2-14 McAllister 1.
Los Angeles County
27-2- 9 Tonner Oil Co. 1.
Richfield
Standard Oil Co.—
32-3- 9 Kramer 2 18.
Conejo
4-1-20 J. A. Hees 1.
San Luis Obispo County
E. J. Miley—
Lot 11, Rancho San Miguelito 1.
Midway-Sunset
6-32-24 Honolulu Cons. Oil Co. 36.
18-11-23 Pliocene Oil Co. 4.
Elk Hills
35-30-24 Pacific Oil Co. 110.
Temblor
36-29-20 Wesco Pet. Co. 22.
Yolo County
San Martinez Oil Co.—
36-11- 1 E. H. Bemmeley 1.

Additional Classified Advertisements on Page 204



SAFETY and Convenience

THE brilliance of electric light brings a great measure of safety to night work in the oil fields.

Electric light in tool houses and other buildings adds much to the convenience and comfort of those who work there.

With a Westinghouse self-contained electric generating plant, you can have the safety and convenience of electricity, delivered from a reliable source of power. The plant operates without batteries on either gasoline, kerosine or natural gas.

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Name.....

Address.....

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Oil Securities Lead Decline in Market

Opinions at American Petroleum Institute Meeting at Fort Worth Factor. Shell Union at New High. Comment on Next Year's Prices

By N. O. Fanning
Room 543, No. 30 Church St., New York

NEW YORK, Dec. 15.—Oil securities were heavily sold during the past week, losses of two and three points being quite general in the leading issues. While they have for the most part failed to participate in the big advance in securities since election, they were conspicuous in leading the decline which took place in the last few days.

Although the weakness in oil stocks was more acute following the address of W. C. Teagle, president of the Standard Oil Co. of New Jersey, before the American Petroleum Institute, in which he outlined the situation in the oil business, the fact that stocks as a whole showed substantial declines leads to the belief that this address was not construed unfavorably. Yet, an analysis of his statements pointed to the conclusion in many quarters that, in Mr. Teagle's opinion, the oil industry can look for comparatively low prices for some time to come.

Mr. Teagle said in part: "Any business man is familiar with the axiom that a 10 per cent surplus of a product of free commerce will fix the selling price of the whole, and the truth of this has been demonstrated in the industry during the past two years. * * * The stocks of crude oil in storage are one of the major problems of the industry. * * * I am not predicting the future level of either crude or gasoline prices. This will be dependent on what is realized for fuel oil, and the situation of the industry will be improved as the use of fuel oil in competition with coal is decreased and its uses for superior purposes further developed. These superior uses can be expanded with confidence because it is not a near possibility that the industry will reach a point where no fuel oil will be available." He also said: "Speaking as a producer, the object which most completely and distinctly meets my eye is the accumulated stocks of 530,000,000 bbls. of crude and products in storage in this country."

Shell Union at New High

Prior to the break in prices of oil stocks Shell Union Oil stock advanced to a new high for all time of 22. In connection with this the Wall Street Journal says:

Strong cash position and good earnings of Shell Union Oil Corp. are causing some discussion of an increase in the common dividend rate next year from the present 25 cents a share monthly.

On the basis of this possibility the stock sold up to a new 1924 high of 22 on Monday. Advance was helped by the favorable factor of an advance in British pound sterling to $4.70, as much of the recent buying in the stock has originated in London. Higher English rate of exchange permits more advantageous buying with foreign funds.

This buying is of considerable significance, inasmuch as more than 70 per cent of Shell Union common is held by Royal Dutch-Shell group. Another factor in the market situation is that some stock which has been hanging over the market, believed to represent some of the old Union Oil of Delaware holdings, have been absorbed recently.

Considering the rather poor oil conditions prevailing in most of 1924, Shell Union's position as one of the really large earners in the oil industry should be established by the fact that this year its earnings will be the largest of any thus far.

Large Earnings

The first nine months resulted in net of $16,629,819 for the common, equal to $1.66 a share. This was about $1,000,000 greater than net for the common in the full 12 months of 1923. Assuming earnings in the fourth quarter as large as the third, Shell Union's 1924 net for the common should be $22,400,000, about $2.24 a share, or nearly $7,000,000 larger than available net for the 10,000,000 junior shares in 1923.

Such a return would be after making the usual liberal allowance for depreciation and depletion, about $6,000,000 for the last quarter, and paying dividends on the $19,200,000 of 6 per cent preferred stock.

Shell Union's policy of charge-offs for depletion, depreciation, drilling, etc., is one of the most liberal of oil companies. Deductions for these purposes in the first nine months were $18,095,000. They represented more than 50 per cent of the $35,605,000 gross income and were about $1,400,000 greater than the balance reported for the common stock. On the same basis, Shell Union would make deduction of this sort for the year of more than $24,000,000.

Over $30,000,000 Cash

Cash position is stronger than any time previously with over $30,000,000 in cash or out in short-term loans, and no borrowings from banks. Large cash item is responsible chiefly by reason of the sale some time ago of its treasury holdings of Union Oil of California stock. These shares represented 26.17 per cent of the California company's stock and came into Shell Union's possession at the time of its formation when Union Oil of Delaware and the American properties of Royal Dutch-Shell were combined into the Shell Union.

Shell Union is one of the largest producers of crude oil in the country, with upwards of 100,000 bbls. daily in the Mid-Continent and California fields. It has its own pipe line systems to move and refineries to handle this production. All of the products resulting from its California operations are marketed through its own stations; a substantial part of its Mid-Continent refined oils is also marketed this way and the balance sold to jobbers.

Standard of New Jersey

Standard Oil Co. of New Jersey sold off to 35⅞, against a recent high of 38¾ and low for the year of 33. Stocks of subsidiaries of this company, controlled directly or indirectly, have recently shown considerable strength. Humble Oil & Refining sold above 40, International Petroleum, Ltd., touched 24 and Imperial Oil Ltd., went to 115, the price of International Petroleum reaching a new high for the year.

Pierce Petroleum

Pierce Petroleum stock was active, advancing fractionally, but the gain was not held. Other active low-priced oils listed on the New York Stock Exchange were Independent Oil & Gas and Texas Pacific Coal & Oil.

Anglo-American Oil

Stock of Anglo-American Oil Co. showed increased activity during the week and sold up to a new high of 18⅝. Later it reacted in sympathy with the general list. The rise in the value of the pound sterling as expressed in American money is considered a favorable factor from the viewpoint of American stockholders of this company, which is one of the leading marketers of petroleum products in Great Britain.

British Controlled Oilfields

Production of British Controlled Oilfields, Ltd., from wells in the Buchivacoa section of the El Mene, Venezuela, Field, reached the record figure of 125,000 bbls. in October. Excess of output over present shipping facilities is being stored pending completion of the new 6-inch pipe line from the field to the port of Altagracia, of which 48.5 kilometers have been laid, with about 5 kilometers more to be laid. Capacity of the new line is estimated at 8,000 bbls. a day. Three additional 55,000-bbl. storage tanks have been completed. October shipments totaled 11,426 tons, against 12,849 tons in September. Well No. 32 in Buchivacoa was completed at a depth of 988 feet, and average 1,415 bbls. daily in October.

Standard Oil Co. commenced drilling operations in the East Buchivacoa area during the month.

Prairie Oil & Gas

Stockholders of the Prairie Oil & Gas Co. at their annual meeting at Independence, Kans., voted to reduce the par value of the shares of capital stock from $100 to $25 and to increase the capital stock from the present authorized and issued capitalization of $60,000,000 to $70,000,000.

One-half of the increased capitalization will be offered for sale to the company under an employes' stock participation plan. The remaining $5,000,000 worth of stock will be held in the company's treasury.

Officers reelected were: President, Nelson K. Moody; vice president and general manager, Dana H. Kelsey; treasurer, E. T. Patterson; secretary, J. A.

(Continued on Page 205)

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock—	Par	§Dividend Rate	Clos. Quotations Dec. 15	Dec. 8	1924 High	1924 Low	1923 High	1923 Low
1.	American Republics	..	..	*29	29	43	25	..	..
2.	Associated Oil	25	6	31⅞	32	74⅝	27⅝	29¼	29¼
3.	Atlantic Ref. com.	100	..	92	89⅛	140⅝	78½	160	98¾
4.	Barnsdall "A"	25	..	19⅞	21	21⅝	14	35	9¾
5.	California Pet. com.	25	7	22⅜	23¼	29	19⅞	28½	17½
6	Cosden & Co. ..com.	..	..	26⅛	26	40¼	22⅝	62¼	23¾
7.	General Am. Tank	..	†3	48	47½	49¼	35½	71⅞	40
8.	General Asphalt	100	..	57½	56½	52	31⅜	64	23
9.	General Petroleum	25	8	41⅜	42⅜	45	38⅝	..	..
10.	Houston Oil	100	..	75⅜	75⅜	82½	61	78	40⅜
11.	Independent Oil & Gas.	10	..	11	11⅜	13½	5⅜	11¼	3⅜
12.	Indian Refining	10	..	5⅝	5	7	3⅜	8½	4
13.	Invincible Oil	50	..	15½	14⅜	16⅞	11⅜	19¼	7½
14.	Maracaibo	..	..	28½	28½	37½	25⅝	28¼	16
15.	Marland	..	..	37½	38	42	29	59⅝	18½
16.	Mexican Seaboard	..	..	20	19⅜	25⅜	14⅛	19⅜	5⅝
17.	National Supply	50	6	57⅞	58⅛	72½	54	68	54
18.	Pacific Oil	50	†2	51⅞	53½	58¼	45	52⅛	31½
19.	Pan American com.	20	16	58	58⅝	61¼	44¼	93½	53
20.	Phillips Petroleum	..	†2	35⅝	36⅜	42¼	28½	69⅝	19⅜
21.	Producers & Refiners.	50	..	27	26⅝	43½	22⅜	58¼	17½
22.	Pure Oil com.	25	6	29	29⅞	30¼	20	32	16¼
23.	Royal Dutch, N. Y. sh.	13.40	2.62	48½	49	59½	40⅜	55⅛	40½
24.	Shell Transport	10	x92½	39⅝	39⅞	41½	33	41¼	29½
25.	Shell Union com.	..	†1	21	22	22	15⅝	19¼	12⅝
26.	Simms Petroleum	10	..	17½	17⅝	19	10⅞	16⅜	6½
27.	Sinclair Cons. com.	..	..	16½	16	27½	15	39⅝	16
28.	Skelly Oil	25	..	21¾	21¼	29	17½	35	12⅛
29.	Standard of California.	25	8	61⅝	61⅞	68½	55½	64½	47⅛
30.	Standard of N. J. com.	25	4	37⅝	37½	42¼	33	44¼	30⅞
31.	Standard of N. J. pfd.	100	7	117	117½	118⅝	115⅝	118¼	114¾
32.	Superior Oil	..	..	4¼	4½	8¼	2⅝	6⅜	2
33.	The Texas Co.	25	12	43	43¼	45⅝	37⅝	52⅞	34⅝
34.	Texas Pac. Coal & Oil.	10	..	11	11⅝	15¼	8¼	24⅝	5½
35.	Tide Water Oil	100	4	129½	*129	161	116¼	144	94
36.	Transcontinental	..	..	3⅝	4	6¼	3¾	14½	1¼
37.	Union Oil of Cal.	25	7.2	36⅝	36⅞	37⅜	35½	..	..
38.	Union Tank com.	100	6	120	*125	132⅞	94	114	106
39.	White Eagle Oil & Ref.	..	2¼	27⅝	26½	29⅝	23⅛	30⅜	20½
	Standard Oil Stocks								
40.	Anglo-American Oil	£1	25	17	18	18	14⅜	19¾	13½
41.	Borne Scrymser	100	12	*225	*225	264	150	153	110
42.	Buckeye Pipe Line	50	14	59	59	85½	51	94	57½
43.	Chesebrough Mfg. Co.	25	14	*48	48⅜	52½	29¼	340	205
44.	Crescent Pipe Line	25	..	*12	*13½	20	11¼	25	15
45.	Cumberland P. L.	100	10	*135	*135	148	109	117	80
46.	Eureka Pipe Line	100	8	82	82	105	74	117¼	87
47.	Galena Signal com.	100	4	57	58	69⅝	52⅛	78	55
48.	Humble Oil & Ref.	25	4.8	40⅜	39½	43⅜	36	41	28¼
49.	Illinois Pipe Line	100	12	127	*129	161	123	171	115
50.	Imperial Oil Ltd.	25	12	112	112	119	99	123	92
51.	Indiana Pipe Line	50	8	72	73	100	66	103	81
52.	International Pet. Co.	100	x50	22⅝	23⅛	22¼	16⅝	24⅜	13¼
53.	Magnolia Pet. Co.	100	4.5	137	137	160	124	166	123
54.	National Transit	12.50	16	21⅞	*22	26⅞	21¼	29	19½
55.	New York Transit	100	10	61	61	97	54½	138	70
56.	Northern Pipe Line	100	6	74	*82	107½	73	111	96
57.	Ohio Oil Co.	25	8	62¾	63⅝	79½	58	86⅜	48¾
58.	Penn-Mex. Fuel	25	..	33	33	45⅝	32½	45	10½
59.	Prairie Oil & Gas	100	8	206	203½	269	194½	272	152
60.	Prairie Pipe Line	100	8	106½	106¼	111	100	117	93
61.	Solar Refining Co.	100	15	204	204	225	170	212	161
62.	South Penn Oil	100	..	131	133	176	117	196	100
63.	South West Pa. Line	100	4	70	71	89	71	89	66
64.	Southern Pipe Line	100	8	85	85	100	83	116	87
65.	Standard of Indiana	25	10	59¾	59¾	69⅜	54¼	69⅞	48⅛
66.	Standard of Kansas	25	..	36⅝	36⅞	50½	32½	56¼	36½
67.	Standard of Kentucky	25	16	119⅝	119½	121½	101	109½	76
68.	Standard of Nebraska	100	20	225	245	256½	198	280	186
69.	Standard of New York	25	5.6	43⅝	43¼	48	37⅜	49⅜	35½
70.	Standard of Ohio com.	100	10	*338	348	377½	277	320	270
71.	Swan & Finch com.	25	..	24	*23	28	20	..	..
72.	Vacuum Oil	25	†3.75	80⅝	80¼	83¼	56½	55½	40
73.	Washington Oil	10	..	*30	*30	29	25	28	20¼
	Miscellaneous Stocks								
74.	Cities Service bks. sh.	..	†21	*16	16¾	19	13¼	18½	12¾
75.	Gulf Oil Corp. of Pa.	25	6	64½	65½	67⅝	56	68¼	45⅝
76.	Mutual Oil	5	10	11⅝	12	14	9⅜	..	..

*Bid, no sales. †In dollars. §The figures in this column are kept up to date as far as possible, but are not guaranteed. xCents per share.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Dec. 15	50.36	Nov. 10	51.86	Oct. 6	46.20
Dec. 8	49.49	Nov. 3	48.16	Sept. 27	46.70
Dec. 1	49.59	Oct. 27	47.58	Sept. 22	47.02
Nov. 24	50.33	Oct. 20	46.99	Sept. 15	47.41
Nov. 17	50.07	Oct. 11	45.34	Sept. 8	47.89

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established by the fact that this year its

Nov. 24	50.23	Oct. 20	46.99	Sept. 15	47.41
Nov. 17	50.07	Oct. 11	45.24	Sept. 8	47.89

(Continued on Page 203)

Note the Shavings

No. 1—⅛ to 1″
No. 5—½ to 2″

The Beaver Square-End Pipe Cutter at Work

Note the chips curling out—just like a lathe tool. Each turn removes a thin shaving, quickly cutting the pipe square without burrs, quicker and easier than wheel or roller cutters. Cutting knives feed automatically. Write for large descriptive folder—gives all the details and large pictures that tell a clear story that will interest you.

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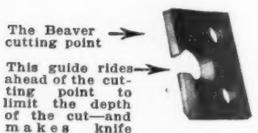
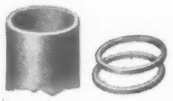

The Beaver cutting point
This guide rides ahead of the cutting point to limit the depth of the cut—and makes knife breakage impossible.

The Beaver Cutting Knife

Old style knives like this (without guides) break easily.



The Beaver cut—and ⅛-inch rings cut with a Beaver.

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Use Beavers and forget the reamer.

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You never use files when you use Beavers—don't need them.

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R E S U L T S

COMPETITION FOR FOREIGN MARKETS

(Continued from Page 24)

He said that American petroleum companies also realized, although too late, that it was not sufficient to have a large production in their own country. As regards the Royal Dutch-Shell group, he states its business has been built up primarily on the principle that each market must be supplied with products emanating from the fields which are most favorably situated geographically and that it goes without saying that "we are now reaping the benefits resulting from this advantageous position."

American companies have not been delinquent in their effort to secure foreign production, despite the inference in the remarks of the founder of the Shell Company. They have done what they could in Rumania, Japan, Canada, China, Trinidad, Peru, Venezuela, Colombia, Argentina and Russia, but until recently without any strong backing of their government and in spite of many restrictive measures against them. In many countries they vainly tried to obtain access, such as to the oil fields of Galicia, Burma and the Dutch East Indies. Efforts now in Mesopotamia and Persia attest the desire of American companies to provide foreign supplies as a means of business furtherance and as a protective and conservation measure as regards domestic supplies. The Standard Oil Co. (New Jersey) has engaged the Royal Dutch-Shell group in a gripping struggle for foreign petroleum sources, while other American companies, such as the Sinclair Consolidated Oil Corporation, have been active in foreign acquisition and exploitation.

America Handicaped

Nevertheless, as pointed out by the Federal Trade Commission in its report on foreign ownership in the petroleum industry, the sources of supply of the domestic industry are largely concentrated within our own borders and in Mexico, while those of our principal competitor are widely distributed throughout the whole world. It appears obvious, the commission adds, that a nation having widely distributed supply and storage facilities and owning the means of distribution will have certain advantages in world trade against one having concentrated supply.

It is, therefore, of greatest moment to this country that strong support be given American companies in their efforts to exploit oil in foreign countries. Not only is this true from an economic standpoint but from the standpoint of national defense. The strongest support is given foreign combines, not only by their governments but popularly, and high honors are dispensed to the great builders of these enterprises.

The ramifications of the Royal Dutch-Shell group are of extraordinary proportions, and at the same time the expansion of the Anglo-Persian Oil Co. has been, if possible, even more sensational. In considering these two gigantic organizations actively competing in the world markets, it is also of interest to contemplate the possibility of a merger of the two groups, and the effect of this development upon the American companies engaged in foreign trade. When the Conservatives in England were formerly in power under the leadership of Stanley Baldwin such a merger was proposed and a plan formulated for the sale of the British Government's interest in Anglo-Persian and the taking over of the company by the Royal Dutch-Shell, the latter converted to outright British domination. With the return of the Baldwin Government, talk of the merger has been revived.

Royal Dutch-Sheli

Starting as a local enterprise in the Dutch East Indies in 1890, the Royal Dutch Co. became an important international factor when in 1907 it affiliated with the Shell Transport & Trading Co. At present the Royal Duch-Shell group, in addition to its possessions in the Dutch East Indies, owns exclusive and important petroleum properties in Sarawak (British Borneo), Rumania, Egypt, Venezuela, Trinidad, Mexico and the United States. It controls five refineries in the United States, four in Mexico, one in Venezuela, one in Curaco, one in Suez and others in Europe and the Orient, together with compression plants, storage facilities and other equipment in different parts of the world. It owns over 1,144,000 tons of tankers, barges and tugboats.

The Royal Dutch-Shell group operates about 120 fuel oil bunkering stations, and a British steamer leaving New York City on a voyage around the world calling at every important port in Europe, along the Mediterranean, in India, the East Indies, China, Japan, the Philippines, Australia, New Zealand and the west coast of North America, and then returning to New York City through the Panama Canal, would find oil bunkering stations operated by a member of the Royal Dutch-Shell group at every important port of call.

Anglo-Persian Oil Co.

The Anglo-Persian Oil Co., identified with the development of oil in southwest Persia, is by no means confining its activities to the Persian fields. Through the D'Arcy Exploration Co., a subsidiary, the company has its scouts out all over the world where oil is likely to be found.

From a local producing company, the Anglo-Persian has developed into a world-wide organization, embracing all branches of the petroleum business. In addition to its original refinery at Abadan, Persia, on the Persian Gulf, which has been greatly expanded, it has a big refinery at Landarcy, Swansea, South Wales, and other refineries are being constructed in close contact with the markets to be served. A great fleet of tankers is being built and the company is developing an immense system of distribution.

The Anglo-Persian's tanker fleet now comprises a total capacity of over 500,000 tons, almost entirely made up of new vessels of large tonnage. The combined fleets, including cargo boats, river and coastal craft, now total 263 vessels of all descriptions.

In developing the distribution field, the company after the war took over the marketing organization of the British Petroleum Co., the Homelight Oil Co., and the Petroleum Steamship Co., confiscated during the World War by the British Government because of German control. This gave it at one stroke a distributing organization for the marketing of petroleum products in the British Isles, with numerous installations, fleets of tank cars and tank wagons and all the equipment for the conduct of nation-wide distributing activities. The British Petroleum Co. now controls 13 main installations adjacent to ports, 473 spirit depots, of which 177 are equipped with can-filling facilities, and 435 depots for handling kerosene and other products.

The Anglo-Persian Oil Co. made a further important addition to its distributing activities in 1919 by the purchase of the controlling interest in Scottish Oils, Ltd., a combination of the whole Scottish shale oil producing companies. This gave it a marketing organization in Scotland, as well as an important addition to its refining capacity.

With the acquisition of other marketing companies on the Continent—in France, Belgium, Denmark, Norway and Italy, the company decided on further increased refining facilities and in 1919 began the construction of a modern refinery at Landarcy. Two years later, in July, 1921, active refining operations were begun. Another refinery is nearing completion at Grangemouth for the supply of the Scottish market. It will have a capacity of 250,000 tons of crude a year. Another refinery with a capacity of 180,000 tons per annum has been erected at Douai, France. Another refining installation is being projected in partnership with the Australian Government at Melbourne.

The Anglo-Persian Oil Co. has established more than 40 main bunkering stations on the shores of the British Isles, at the principal Continental ports, as well as in the chief shipping centers of Asia, Africa and Australia.

The big time element

taken care of, here!

PART of what you sell to customers is speed in delivery. Here's the organization to give you the greatest possible speed—with low freight rates. Look at the list and locations of our refineries and branches for the answer. In addition we have our own telegraphic communication, our own pipe lines and tank cars to cut out delays. And more than 5,000 producing wells in the country's finest crude fields —so that we can absolutely control quality, can give you products exactly to specifications. A money-making combination!

Write, wire or phone your requirements:

GASOLINE—all grades.
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CYLINDER STOCKS—600, 650, Steam refined, bright and filtered.
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MINERAL SEAL OR 300 OIL
—and all other Petroleum Products.

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Charleston, W. Va.
Warren, Pa.
Knoxville, Tenn.

J. EDGAR PEW NEW PRESIDENT OF A. P. I.

(Continued from Page 21)

Sun Oil Co., Dallas, Tex.; vice presidents, Edward Prizer, chairman, board of directors, Vacuum Oil Co., New York; E. W. Clark, vice president, Union Oil Co. of California, and Frank Phillips, president, Phillips Petroleum Co.; treasurer, A. L. Beaty, president, The Texas Co.; secretary and general counsel, R. L. Welch; assistant secretary and general counsel, W. R. Boyd, Jr.; and assistant treasurer, Lacey Walker.

The following executive committee was elected: J. Edgar Pew, vice president, Sun Oil Co., Dallas; Edward Prizer, chairman, board of directors, Vacuum Oil Co., New York; E. W. Clark, vice president, Union Oil Co. of California; Frank Phillips, president, Phillips Petroleum Co.; A. L. Beaty, president, The Texas Co.; A. C. Bedford, chairman board, Standard Oil Co. of New Jersey; W. N. Davis, president, Mid-Continent Oil & Gas Association; Robert W. Stewart, chairman board, Standard Oil Co. of Indiana; George S. Davison, vice president, Gulf Oil Corp.; H. L. Doherty, president, H. L. Doherty & Co.; E. C. Lufkin, chairman board, The Texas Co., and Thomas A. O'Donnell, chairman of board, California Petroleum Corp., ex-officio member.

The following membership committee was elected: F. B. Henderson, vice president, Associated Oil Co.; J. D. Collett, O'Keefe & Collett, Fort Worth, Tex.; J. C. Donnell, president, Ohio Oil Co.; J. F. Lucey, Dallas, Tex., and Herbert L. Pratt, President, Standard Oil Co. of New York.

Taxation and Accounting

The outstanding development in connection with the group sessions on problems of oil taxation and accounting was the drawing up of a plan to be followed in establishing a uniform accounting system for the industry. This is the first definite step for uniform accounting and follows preliminary work accomplished by M. W. Mattison, director of the institute's division of taxation and accounting, over a period of a number of years. Mr. Mattison has prepared for the institute a manual of accounts, now in rough draft form, which will serve as a basis for the work of a committee of the institute whose appointment was recommended by the group session.

Mr. Mattison read a digest of his material covering problems in accounting, refining operations and sales, before the group session. R. D. Matthews, comptroller of the Union Oil Co. of California, outlined the procedure recommended for the establishment of a uniform system of oil accounts. A committee was appointed comprising M. W. Mattison, Rodney Durkee, comptroller of the General Petroleum Corp.; secretary, J. H. Tuttle, of the Standard Oil Co. of California; C. H. Jay, auditor of the Pure Oil Co.; H. A. Gidney, general auditor of the Gulf Oil Corp., and Paul Jones, secretary of H. L. Doherty & Co., to draw up a plan.

The work of establishing a uniform accounting system will probably take about a year. The group sessions included a round table discussion on the subject of accounting and also on taxation. J. L. Darnell of New York read a paper on "Valuations of Oil Properties for All Purposes." Mr. Mattison read a paper by J. J. Cosgrove, of The Texas Co. on changes in the 1924 revenue act as applied to oil, and F. R. Angevine, of New York, read a paper on "Invested Capital—Realized Appreciation."

Railroad Transportation

The general committee on railroad transportation of the institute held a meeting on Wednesday. A general discussion of proposed changes in consolidated freight classification failed to materialize after it was decided and resolved that after having been given an opportunity to reach some decision through the classification committee, the industry could not agree on the subject. It was then stricken from the docket.

The general committee adopted a resolution presented by the car service subcommittee as follows: "It is the sense of the car service subcommittee that the present equalization rule will be satisfactory as it is now worded with the addition of the tentative amendment providing for railroads assuming liability for misrouting and that further a special rate should be provided for settlement of excess empty mileage taking into consideration that cars already in railroad service are entitled to a rate approximately the actual cost of service." The general committee passed a resolution, that it was the sense of the committee that the American Petroleum Institute should intervene in any cases attacking the rules, rates and regulations pertaining to the mileage equalization rule to protect the interests of its members.

Storage rule No. 6 was briefly discussed and then laid over. The mechanical subcommittee reported that the Union Tank Car Co., The Texas Co. and Mexican Petroleum Co. were going to give practical tests to six new types of valves on tank cars to comply with Interstate Commerce Commission suggestions.

Correspondence between Colonel Dunn of the Bureau of Explosives, and G. B. McGinty, secretary of the Interstate Commerce Commission, reviewing the question of the proposed safety rule regarding sampling tank cars before placement, was read and it was the belief of the committee that this question is settled.

Oil Burners Discussed

At the Wednesday morning group session paper was read by O. P. Keeney, president, National Petroleum Association, on "The Place of Furnace Oil in the Petroleum Industry;" Edward P. Bailey, president, American Association of Oil Burner Manufacturers, on "The Problem of the Oil Burner Manufacturer," and Wallace Capen, of the Home Appliance Corp., on "The Sale and Service of Domestic Oil Burners."

The outstanding feature of the group session on motor fuel and motor lubrication held Wednesday afternoon, was the report on the joint motor fuel investigation being conducted by the Bureau of Standards, the Institute and automotive organizations. This was given in a paper on "Economic Motor Fuel Volatility," by Dr. H. C. Dickinson and S. W. Sparrow, of the Bureau of Standards. Informal reports of the progress of the investigation have been made from time to time during the past year. Perhaps one of the most definite accomplishments in this research has been the development of what appears to be an entirely satisfactory method for measuring crankcase oil dilution. This method was described in detail at the group session by T. S. Sligh, Jr., physicist of the Bureau of Standards, in his paper on the "Measurement of Crankcase Dilution by the Vacuum Distillation Transition Method." Neill MacCoull of The Texas Co., spoke on "Lubrication of the Automobile Engine." J. A. C. Warner of the Society of Automotive Engineers, gave a paper on "Utilization of Motor Fuel from the Standpoint of the Automotive Engineer."

Closing Day of Institute

The morning session on Thursday, the closing day of the Institute, was devoted to group sessions.

Captain J. F. Lucey, chairman of the meeting on standardization of oil field equipment, read the report of the committee on standardization of rotary drilling equipment which has progressed so far in its work as to soon be able to present it to the Institute for final action. H. J. Lockhart presented the report of the committee on standardization of rig irons. W. W. Fondren, chairman of the committee on standard rigs and derricks made a brief report on progress, which thus far has been satisfactory, and C. C. Schappenberg, chairman of the committee on standardization of wire rope and manila cordage, which has been working only a short time, outlined what the committee has been able to accomplish thus far, in which he expressed regret that so many producers and field men had yet failed to grasp the importance to them of the work the Institute was trying to do in the way of simplifying and standardizing their equipment.

At the group session on problems in connection with the storage and transportation of petroleum and its products held Thursday morning H. L. Shoemaker, of the Standard Oil Co. (New Jersey), presented a report of investigations on methods of determining the vapor pressure of gasoline for transportation classification. The matter of the abridged table for reducing the volume of petroleum products to a 60-degree temperature base was presented but not discussed. There was a round table discussion on lightning protection after a preliminary statement by Ralph J. Reed, of the Union Oil Co. of California.

The closing speaker on the program was Edward Prizer, chairman of the board of directors of the Vacuum Oil Co., New York, who took the place of H. L. Horning. Mr. Prizer spoke extemporaneously and made a plea for closer relationship between all nations of the world.

PRESENT PETROLEUM PRODUCTION IN EUROPE

(Continued from Page 78-D)

men" which in spite of considerable depths had to be given up without result.

Further prospecting work is being done from other sources in Jugoslavia, but nothing has so far transpired.

Austria

During the war some drilling for oil was undertaken by the military headquarters in the March Field in Lower Austria, but without any result. After the war an Austrian-Swiss group put down a well in Wollmannsberg near Stockerau in Lower Austria attaining a depth of 800 metres. Several gas eruptions have been stated, but no oil was found.

A borehole is being sunk at Schleinbach in Lower Austria. The work has only been started, but the prospects are considered as being not unfavorable.

Near Taufkirchen in Upper Austria heavy oil has been traced in small quantities. In the district of Wels gas has been produced for many years and it is expected that in Upper Austria it will also be possible to work up a production of oil to allow of commercial exploitation, The presence of oil in appreciable quantities in Austria is looked upon with some certainty, as the geological conditions in favor thereof exist there.

Holland

Petroleum has been struck for the first time in Holland when prospecting for coal in Corle near Winterswiji. At a depth of 700 metres after passing through salt strata, oil was found flowing out by its own pressure. However, the casing afterwards collapsed on account of the thrust of formation and the drilling was closed up. The oil found was rich of benzine, the specific weight being 0.860. As the dirlling was intended for coal, the water had not been shut out and the thickness of tubes was insufficient.

At present three new wells are being drilled for oil by Mr. Koster for the account of the Mijnbouwkundigen Werke in Heerlen, one near Groenlo and the two others near Lichtervoorde. These drilling sites, situated rather distant from Corle, have probably been chosen, in order to put down the well in the anticlinal line beside the mass of salt drilled through at Corle.

It is quite possible further quantities of oil may be found in Holland and presumably in all those districts having in former times been the coast of the sea, the latter in the tertiary epoch covering Holland and the north of Germany and where a great mass of salt is to be found. This, for instance, is the case in Overijssel near Boekelo. Salt is also found in the Overbetuwe near Pannerden. Of course, these are only suppositions. Holland has so far been tested geologically to only a small extent.

Also in Zevenaar on the German borderline traces of oil are said to have been found. The district of Winterswijk can hardly be considered as being the continuation of the Hanover oil zone. The strike of the strata in Holland is southeast-northwest. One may believe that the ledges of rocks of the Ruhr district are continued along the eastern part of Gelderland and Overijssel. The coal formation near Winterswijk is consequently the continuation of the Westphalian coal measures and presumably proceeds in the direction of Amsterdam.

The continuation of the Hanover oil district should therefore be searched for much more to the north, for instance in Nord-Dreante or Groningen.

ADJOURN RATE HEARING; DECISION LATER DATE

(Continued from Page 176)

any freight rate advantage by virtue of their location.

The railroads completed their evidence and introduced a large number of exhibits. In the first place, they contended the rates on fuel oil were affected only so far as they probably might bear some relationship to the rates on gasoline and lighter oils. They stated they would be satisfied with whatever adjustments the commission made on this product. Their principal argument for defense was their contention that the present level of rates on petroleum and its products from the Mid-Continent Field to the destination territory involved in these cases was too low. They introduced considerable evidence showing the rates involved were much lower than rates on petroleum and its products between other points of origin and destination, compared with the rates on classes and other commodities here within, or between other refining and consuming areas. They strongly contended the present rates do not produce earnings commensurate with the service rendered, and that increases should be made from all of the Mid-Continent Field to the territory involved. They also contended the present originating groups be regrouped and the rate relationship between these groups should be materially changed.

From the evidence introduced by the refining industry in these cases, it is very evident this freight rate question is of very great importance to the independent refining industry, and it is the general opinion of most of the refining companies at these hearings that the industry cannot stand any increase in the present level of rates. Practically all are in agreement as to this fact. It is also generally conceded by the refiners in origin territory with the States of Louisiana and Texas that they cannot absorb any increased differential, or any greater rate than the rates which may be made from the States of Oklahoma and Kansas.

COASTAL QUOTATIONS ON REFINED PRODUCTS

HOUSTON, Tex., Dec. 13.—Pale, 750 viscosity, 3½ color is slightly off, being quoted at 22 and 23 cents. Pale, 2,000 viscosity is quoted at 29 and 30 cents. Red oils, 500 viscosity is some stronger, quoted at 16½ and 17½ cents and red 1,200 viscosity is 25 cents.

Fuel oil is in demand at $1.60.

Foreign buyers have visited the Coastal refiners but so far no orders have been placed. The Galena-Signal Oil Co. has opened a distributing plant in Dublin, Ireland, and reports business steadily increasing. Two tankers carrying gasoline, gas oil and lubricating stocks are consigned each month from the plant here. The Galena Signal Co. is the first American company to establish warehouse and distributing stations in the Irish Free State.

Contracts with the large saw mills in East Texas "piney woods," for lubricating oils are usually renewed after the new year and sales agents are now preparing to campaign for that business. It usually goes to the big refining companies. The smaller plants say they are sold up on zero cold test goods and have but very small stocks on hand. There is a demand from jobbers for barreled goods and Keen & Wolf refining has a day and night force at work in the barrel house.

The big Port Arthur refineries are experiencing some troubles due to inadequate water supply and test artesian wells are now being drilled in sections of Orange and Jefferson Counties.

PUBLIC RELATIONS COMMITTEE APPOINTED BY THE INSTITUTE

By L. M. Fanning

FORT WORTH, Tex., Dec. 13.—A public relations program for the petroleum industry was approved by the directors of the American Petroleum Institute. It provides for the creation of a committee with representatives of the Institute and the other national oil associations to direct the work of telling the public the story of oil. One distinctive feature is the public statement of the amount of money to be expended. Probably this is the first instance that an industry engaging in educational work has publicly stated the sum it intends to expend in this character of activity. The announcement was doubtless decided upon so there could be no misconception on the part of the public. The committee was authorized to raise by private subscriptions and to disburse not more than $100,000 a year.

The membership of the committee is to be composed of nine members to be appointed by the President of the American Petroleum Institute from among the membership of that organization and one member officially designated by each of the following named oil trade organizations: Mid-Continent Oil & Gas Association, Western Petroleum Refiners Association, Association of Natural Gasoline Manufacturers, National Association of Independent Oil Producers, National Petroleum Marketers Association, National Petroleum Association, American Oil Men's Association, Chamber of Mines and Oil.

While details have not been fully decided it is understod the Institute, under the supervision of the public relations committee, will prepare information for the press, issue pamphlets available to units of the industry for distribution as these units see fit, and that advertisements of a god-will character will also be written and made available to them. The Institute, however, will do not direct advertising. Printing and wholesale distribution of pamphlets as well as advertising, involves funds far in excess of the amount appropriated and the institute will not attempt these methods directly. It will simply prepare the material for the use of companies as they see fit, thus providing a centralizing of the effort to inform. Much of the material to be collected and distributed will probably be of a statistical character.

Distribution through filling stations will be one of the most effective ways of using the material, it is believed. This method is favored and has been used by many of the companies represented on the board. Material will also be available for speakers. Public talks and the use of the radio will be encouraged.

The joint educational committee in whose hands the working out of a program was placed comprised the following: Paul Shoup, K. R. Kingsbury, B. B. Brooks, J. Edgar Pew, J. A. Moffett, Jr., E. C. Lufkin, Edward Prizer, Harry H. Smith, R. L. Welch, all representng the institute; and D. E. Buchanan, Colonel U. G. Lyons, L. V. Nicholas, F. A. Pielsticker, W. H. Gray, N. W. Davis, representing other national associations.

The special sub-committee which drafted the program was composed of Edward Prizer, president of the Vacuum Oil Co.; E. C. Lufkin, chairman of the board of The Texas Co., J. A. Moffett, Jr., vice president of the Standard Oil Co. (New Jersey), and T. W. Yocum, publicity director of the institute.

Late Fields

NORTH CENTRAL TEXAS

In the South Vernon Field a feature was the bringing in of a 300-bbl. well by Bridwell & Heydrick from an entirely new horizon, uncovered at 1,824 feet, making the sixth pay depth to produce since the field's inception some months ago.

Another development was the finding of another new deep pay at 2,115 feet by the same parties in their No. 3 test, which, after penetrating 17 feet, bailed several barrels of oil, accompanied by water. This sand, the deepest yet picked up, gives hope of making a producer, it being the opinion the water is coming from below the sand. It is expected the owners will put a lead plug in the bottom in an effort to make a well. Further operations in the well will be watched with interest for the success of their efforts will mean the deepening of a great many tests abandoned at a much lesser depth.

The Texon Oil & Land Co.'s No. 2, group 1, University, Reagan County, is making 3,000 bbls. daily from sand at 2,950 to 2,980 feet. This well is a half mile north and slightly east of the same company's No. 1, group 1. It extends the producing area slightly to the east, being just a little way to the east of a north and south line through No. 11 University of the Big Lake Oil Co.

CALIFORNIA

LOS ANGELES, Cal., Dec. 16.—The Associated Oil Co. has completed a 6,000-bbl. well in the Dominguez Field and expects several other good ones to be completed there within a short time.

FIFTH BIG WELL IN THE WORTHAM FIELD

MEXIA, Tex., Dec. 16.—The fifth big well in the Wortham Field came in last night. E. L. Smith's No. 1 Beall, offsetting the Kirby Petroleum Co.'s No. 1 Bounds, started off the first hour at the rate of 7,000 bbls. a day. It was drilled to 2,996 feet, the top of the sand having been found at 2,945 feet. In the first 12 hours the well flowed 2,900 bbls. and was regarded as a 5,000-bbl. well.

The four other wells in the field for the 24 hours ending Monday morning produced as follows: Penn and others' No. 1 McCorkle, 7,000 bbls.; Kirby Petroleum Co.'s No. 1 Bounds, 7,000 bbls.; Boyd Oil Co.'s No. 1 Simmons, 8,000 bbls.; Boyd Oil Co.'s No. 1 Boyd, 750 bbls.

The Boyd Oil Co. plans to build a casinghead gasoline plant in the field. The gas in Wortham tests a little less than one gallon per 1,000 feet.

WORLD'S PRODUCTION OF CRUDE PETROLEUM, 1857-1923, BY YEARS AND COUNTRIES, FROM U. S. GEOLOGICAL SURVEY

(Thousands of barrels of 42 U. S. gallons.)

Year	Rumania	United States	Italy	Canada	Russia	Poland (Galicia)	Japan and Formosa	Germany	India	Dutch East Indies	Peru	Mexico	Argentina	Trinidad	Egypt	Persia	Sarawak	Algeria	Venezuela	France	England	Czecho-slovakia	Colombia	Other countries	Total	Percentage produced by U. S.
1857	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	...
1858	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	...
1859	.....	4	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	...
1860	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	33
1861	.....	9	500	*...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	509	98
1862	.....	17	2,114	*...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,131	99
1863	.....	23	3,057	*...	12	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,092	99
1864	.....	28	2,611	*...	83	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,763	94
1865	.....	33	2,116	*...	90	65	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,304	92
1866	.....	39	2,498	2	110	67	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,716	92
1867	.....	42	3,598	1	175	83	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,899	92
1868	.....	51	3,347	1	190	120	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,709	90
1869	.....	56	3,646	*...	200	88	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3,990	91
1870	.....	59	4,215	*...	220	202	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4,696	90
1871	.....	84	5,261	*...	250	204	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,799	91
1872	.....	90	5,206	*...	270	165	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,730	91
1873	.....	91	6,293	*...	308	185	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6,877	92
1874	.....	104	9,894	*...	365	475	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10,838	91
1875	.....	103	10,927	1	169	583	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,933	92
1876	.....	108	8,788	1	220	697	158	5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9,977	88
1877	.....	111	9,133	3	312	1,321	164	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11,051	83
1878	.....	108	13,350	3	312	1,801	170	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15,764	85
1879	.....	109	16,397	4	312	2,401	176	18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18,417	84
1880	.....	110	19,914	3	575	2,761	215	23	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	23,601	84
1881	.....	115	26,286	2	350	3,001	229	26	9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30,018	88
1882	.....	122	27,661	1	275	3,601	287	17	29	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	31,993	86
1883	.....	136	30,350	2	275	4,538	330	15	58	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35,704	85
1884	.....	139	23,450	2	250	6,002	365	20	27	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30,255	78
1885	.....	211	24,218	3	250	10,805	408	28	46	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	35,969	67
1886	.....	231	21,859	2	250	13,926	465	30	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36,756	59
1887	.....	168	25,065	2	584	18,006	306	33	74	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	47,243	59
1888	.....	182	28,283	1	526	18,368	344	29	74	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	47,807	59
1889	.....	219	27,612	1	695	23,049	467	37	85	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	52,165	53
1890	.....	298	35,164	1	705	24,609	515	53	68	94	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61,507	57
1891	.....	383	45,824	3	795	28,691	659	52	108	118	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	76,633	60
1892	.....	488	54,293	8	755	34,573	631	53	109	190	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	91,100	60
1893	.....	593	60,515	18	780	35,775	646	69	101	242	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	88,739	67
1894	.....	535	48,425	19	798	40,457	693	100	100	299	660	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	92,038	53
1895	.....	508	49,344	21	829	36,375	949	173	123	327	688	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	89,337	55
1896	.....	576	52,892	26	726	46,140	1,463	170	121	372	1,216	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	103,692	51
1897	.....	543	60,960	18	727	47,221	2,444	237	145	430	1,427	47	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	114,199	53
1898	.....	571	60,476	14	710	64,399	2,226	262	166	546	2,552	71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	121,993	50
1899	.....	776	55,364	15	758	61,610	2,376	319	184	542	2,964	71	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	124,979	44
1900	.....	1,426	57,071	16	808	65,955	2,314	539	192	941	1,796	89	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	131,147	44
1901	.....	1,629	63,621	12	913	75,780	2,347	371	358	1,079	2,253	274	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	149,137	43
1902	.....	1,678	69,389	16	757	85,168	3,251	1,117	314	1,431	4,014	276	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	†30	167,440	41
1903	.....	2,060	88,767	19	531	80,540	4,142	996	354	1,617	5,430	287	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	†26	181,809	49
1904	.....	2,763	100,461	18	487	75,591	5,235	1,209	446	2,510	5,770	278	75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	†36	194,879	52
1905	.....	3,599	117,081	26	553	78,537	5,947	1,219	637	3,385	6,508	290	126	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	†40	217,948	54
1906	.....	4,421	134,717	44	634	64,960	5,766	1,347	561	4,137	7,850	373	251	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	†30	215,091	63
1907	.....	6,378	126,494	64	569	68,897	5,468	1,564	579	4,016	8,181	531	502	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	†30	213,262	59
1908	.....	8,118	166,096	60	789	61,851	8,456	1,718	757	4,344	9,983	751	1,005	*...	.....	.....	.....	.....	.....	.....	.....	.....	.....	†30	263,957	63
1909	.....	8,252	178,527	51	528	62,187	12,612	1,871	1,009	5,047	10,283	946	3,933	12	*...	.....	.....	.....	.....	.....	.....	.....	.....	†30	285,287	63
1910	.....	9,327	183,171	42	421	65,979	14,933	1,887	1,019	6,677	11,042	1,411	2,714	18	87	.....	.....	.....	.....	.....	.....	.....	.....	†20	298,709	61
1911	.....	9,724	209,557	51	316	70,337	12,673	1,829	1,032	6,138	11,031	1,258	3,634	20	143	.....	.....	.....	.....	.....	.....	.....	.....	†20	327,763	64
1912	.....	11,108	220,449	75	291	66,184	10,519	1,737	1,017	6,461	12,173	1,465	12,553	13	285	21	.....	.....	.....	.....	.....	.....	.....	†20	344,361	64
1913	.....	12,976	222,935	54	243	68,019	8,535	1,659	1,031	7,117	10,846	1,752	16,558	47	437	214	.....	.....	.....	.....	.....	.....	.....	†20	352,443	63
1914	.....	13,555	248,446	47	228	62,834	7,818	1,940	857	7,930	11,172	2,071	25,696	131	504	98	1,857	141	.....	.....	.....	.....	.....	†20	385,345	64
1915	.....	11,827	265,763	40	315	67,020	6,436	2,636	781	7,410	11,422	1,837	26,235	276	644	753	2,910	318	1	.....	.....	.....	.....	†20	407,544	65
1916	.....	12,030	281,104	44	215	68,548	5,352	2,923	703	8,202	11,920	2,579	32,911	516	750	912	2,616	392	4	.....	.....	.....	.....	†10	432,406	65
1917	.....	8,945	300,767	51	198	65,817	6,587	2,963	656	8,491	12,547	2,592	40,546	797	929	404	4,477	629	8	.....	.....	.....	.....	†25	457,430	66
1918	.....	3,721	335,316	41	214	63,072	6,228	2,861	642	8,079	13,180	2,577	55,293	1,145	1,602	943	7,147	542	9	120	.....	.....	.....	219	502,751	67
1919	.....	8,730	355,928	35	305	27,168	6,032	2,441	270	8,188	12,778	2,527	63,828	1,242	2,082	1,935	8,623	504	7	333	§663	.....	.....	.....	503,320	71
1920	.....	6,618	378,367	35	241	31,752	6,096	2,238	265	8,736	15,508	2,628	87,073	1,332	1,841	1,517	10,139	596	5	425	334	2	48	.....	555,796	68
1921	.....	7,435	442,929	35	196	25,430	5,607	2,221	246	8,376	17,629	2,817	163,540	1,657	2,083	1,042	12,230	1,020	4	457	356	3	69	.....	695,281	64
1922	.....	8,368	472,183	32	188	28,968	5,167	2,233	274	8,734	16,958	3,699	193,398	2,061	2,354	1,255	16,672	1,411	2	1,432	389	3	94	xx60	746,928	62
1923	.....	9,843	557,531	31	179	35,692	5,227	2,055	319	8,529	16,720	5,314	182,278	3,018	2,446	1,188	22,247	2,849	9	2,201	496	1	120	323†100	858,215	65
1924	.....	10,867	732,407	34	170	39,156	5,973	1,789	312	8,320	19,868	5,699	149,585	3,400	3,051	1,054	28,793	3,940	9	4,069	403	1	74	424 112	1,018,900	72
Total	.....	194,539	7,191,989	1,141	25,400	2,007,837	184,947	47,665	16,299	149,044	273,555	44,509	1,061,784	15,752	19,207	10,636	118,712	12,342	59	9,028	2,341	10	405	747 678	11,388,626	63

*Less than 1 thousand. †Estimated. ‡Cuba. §Production in previous years credited to Germany. xEcuador

committee as follows: "It is the sense of the car service subcommittee that the

connection with the storage and transportation of petroleum and its products

district are continued along the eastern part of Gelderland and Overijssel. The

Orange and Jefferson Counties.

THE ROYAL DUTCH AND SHELL COMPANIES

(Continued from Page 91)

East Indies. The company developed a substantial production.

The main Colonial office of the Royal Dutch Co. was at Batavia, and it was while here that Kessler heard of young Deterding working at Penang for the Netherlands Trading Co. and engaged him as salesman for the Royal Dutch.

As soon as Deterding had proved his capacity as salesman in the Royal Dutch Co. he was asked to take charge of the whole sales organization in the Far East, with headquarters at Singapore.

Here he engaged in the first of the long series of bitter battles with his competitors, chief of which was the Standard Oil Co.

It was in connection with this fight that Deterding began negotiations with Marcus Samuel, now Lord Bearsted, the British oil Croesus and head of the Shell interests, which resulted in the affiliation of the Royal Dutch Co. and the Shell Transport & Trading Co.

"Deterding entered into an arrangement with Marcus Samuel to transport his oil from the Dutch East Indies to China and elsewhere in the Far East. From this deal grew the network of ramified Dutch-Shell connections.

Deterding became managing director of the Royal Dutch Co. in 1901. In 1902 he was elected general managing director, which position he still holds today.

Sir Henri is still a subject of the Queen of Holland, although he has a British title. For his services during the war he made a Knight Commander of the British Empire. He has been honored by several other countries, including France and Italy, and has been tendered high range by the Netherlands Government.

Newest Director Son of Founder

The founder of the Royal Dutch Co. was J. B. August Keesler, whose name is among the leaders of Holland's Colonial trade developers. After organizing the Royal Dutch Co. in 1890 and carrying on a tremendous expansion, his work was taken up and enlarged by Deterding, the present general managing director of the organization.

Working his way up in the organization, which was founded two years after he was born, was the son of the founder who bears his father's name. After having served the Royal Dutch in various positions and countries, the younger Kessler was elected a managing director of the company on December 20, 1923.

Mr. Kessler was born at The Hague, June 16, 1888. He studied at the Technical University at Delft, which he left in 1911 as an electro-technical engineer. He entered the service of the Royal Dutch in May, 1912.

Interprets Law for the Royal Dutch Co.

Dr. Aug. Philips represents the legal end of the board of managing directors of the Royal Dutch Co. His familiarity with the Royal Dutch ramifications has been gained by long association with the company in an advisory and direct capacity.

Dr. Philips was born at Amsterdam September 24, 1864. He studied law at the University of Leyden from 1884 to 1889. After having terminated his studies he associated with the Amsterdam law firm of C. J. de Vries. This office—and especially Dr. Philips—acted as legal advisers to the Royal Dutch.

As the Royal Dutch organization expanded, Dr. Philips became directly connected with it. In 1914 he was elected a director of the company and in 1922, a managing director.

Heads Royal Dutch Geological Forces

Heading the geological forces of the Royal Dutch Co., operating in practically all countries where oil is known to exist or is suspected of hiding, Dr. J. Th. Erb has risen in the company from the rank of geologist in the Dutch East Indies to a managing directorship.

He was born in Volkach, Switzerland, on February 25, 1874. He studied geology and natural sciences at Technical University at Zurich 1893-1896 and at the University of Zurich 1896-1899. He completed his studies in mining engineering in 1903 at Berlin.

Meantime he entered the service of the Royal Dutch Co. in 1900 as geologist, and worked as such in the Dutch East Indies, Rumania, Russia, Egypt, Sarawak, United States, Galicia and Mexico, his practical geological experience being therefore as geographically ramified as those of the organization with which he is connected. He was chief geologist of the Royal-Dutch-Shell group from 1912 to 1921.

In 1921 Doctor Erb became a managing director of the Royal Dutch Co. Of interest is the fact that the Royal Dutch Co.'s management is now vested in four directors under the supervision of a board of commissaries .the articles of association providing the directors must be Dutch citizens. The provision regarding control by nationals of the Netherlands is strictly enforced. Dr. Erb entered his position as one of the managing directors, only after he had assumed Dutch nationality.

Dr. Erb's duties of supervising geological work of the Royal Dutch Co. in whatever country it is being prosecuted necessitates frequent inspection trips, including visits to this country. He was in the United States about a year ago.

Began as Soldier, Now Directs Research

J. E. F. De Kok, now a managing director of the Royal Dutch Co., began his career as a soldier. Born at Maastricht on January 6, 1882, he studied at the military school of Breda. He became an officer in the Dutch East Indian army at the ago of 20. His bent for the technical, led him to forsake the adventurous life of a soldier and he left the military service.

He studied at the Technical University of Delft where he took his degree as a chemical engineer in 1908. In the same year he joined the Royal Dutch Co. He has served in all positions in the technical field and has worked in many countries establishing himself as one of the leading petroleum scientists.

He became a managing director of the company on April 1, 1921, and has charge of the important technical refinery work and research work of the vast organization.

SOME SUGGESTIONS FOR RELIEF OF INDUSTRY

(Continued from Page 24)

rowing limit for this purpose would be extended immeasurably.

Advantages Asserted

This system therefore from the producer's standpoint has these advantages. First—he is not forced to take a set price for his oil. Second—he can hold his oil until the price offered gives him a living wage over the cost of production. Third—it gives him good collateral to be used with his banker when he is in need of funds and fourth—it tends to curtail excessive development in times of overproduction.

From the refiner's standpoint this enables him to purchase sufficient oil to meet his requirements, when he needs it, providing he is willing to pay a fair price for the crude and upon presentation of the storage receipts purchased from the producer or purchasing agency, the oil is turned over to him by the pipe line company. Under this system the refiner is enabled to pass along to the consumer the benefit of fluctuations in the crude market.

From the purchasing agency's standpoint this plan offers a vast relief from the load which he is now carrying, in having to finance the purchase of the oil twice a month and store it for an indefinite period with the attendant losses. This burden carried by the purchasing agencies at this time is very heavy and requires millions of dollars to finance. This system would release a large portion of this money and allow it to be used in other places in the industry to greater advantage.

From the pipe line company's standpoint this plan would be a very profitable one. The storage fee charged the producer would result in a large income on the money invested in storage already built and would pay for any extra tankage (within a reasonable time) that it might become necessary to build. This plan of course contemplates a reasonable charge for pumping oil into storage and out.

From the investor's standpoint this system would eliminate a great many of the risks taken by those who now invest in oil. The oil certificates under this system would offer a reasonably safe investment.

From the banker's standpoint this offers a gilt-edged security for loans. A collateral that he can ascertain the value of at any time. He does not have to take the risk of an expert's valuation of a property or the statement of a company as to its assets. He has security that he can cash in within an hour when necessary.

The general principles of this system of purchase are not an experiment as the system in modified forms has been used in the past with great success. Whatever conditions may have led those in charge of certain companies a number of years ago to make the change to the present system appear to be long past and we believe the fallacy of the present system must be apparent to these men.

Localized Proration

The second change which we suggest consists of a localized proration of oil run into storage by the pipe line companies when a period of overproduction of crude oil is threatened. At such a time, if the producers in any district drill too fast and produce a flood of oil at any one point, then the pipe line companies serving in that district should prorate the runs from that field or if necessary even cease to run any oil and thus force these reckless and shortsighted operators to curtail their drilling or store their own oil. The rest of the producers in the United States should not be penalized and suffer untold loss because of the fact that a few operators do not use good judgment in the handling of their business.

It must be realized by the industry that the 275,000 small producing wells are the backbone of the industry and they must be conserved.

Bringing great quantities of oil to the surface from new or so-called flush pools, when there is already a sufficient supply for current demands being produced by the older pools and small wells, is criminal folly. It is economic waste of the most deplorable kind. This oil brought to the surface suffers loss by evaporation, it lowers the price of crude oil below the cost of production of the smaller wells and it depletes the nation's future supply. The oil left in the ground suffers no loss or deterioration and it is there ready to be called upon when the demand requires it.

It is unbelievable that men of supposedly good business judgment would continue to bring to the surface great and increasing quantities of crude oil and dump it on an already glutted market and still further depress the price of their own commodity. Whatever reasons actuate them in this course are indefensible and without any business or economic excuse and so for the good of the industry and the future welfare of the nation this procedure must be stopped. The two changes suggested herewith by us, namely, the purchase of oil by "credit balance system" and the proration of runs in flush pools will go far toward accomplishing this result.

The method of determining the time when such proration should become effective by the pipe line companies is simple. When available storage is nearing exhaustion and when the demand for crude oil is less than the amount going into storage, then the proration should be put into effect. The amount of necessary storage facilities would be determined by the requirements of the business and a reserve for national emergencies.

Limiting Cracking

The third change which we suggest lies in the refining branch of the business. When there is a large overproduction of gasoline, then the refiners operating cracking stills should shut them down and simply run the crude through the topping plants and make and market only straight run gasoline, storing the residue until there again becomes a shortage of gasoline. This would in a short time remove any distress gasoline from the market and stabilize the price and raise it to where there would be a profit in refining

CALIFORNIA'S TANK FIRE EXPERIENCE AND PROTECTION AGAINST LIGHTNING

By Ralph H. J. Reed
Union Oil Co. of California
Before American Petroleum Institute, Fort Worth, Tex.

In California approximately two-thirds of all the tank fires in 15 years have been caused by lightning. The number of fires is small compared with the number of such tanks actually in service. It has been possible to accumulate through the courtesy of the Pacific Coast Group of the Committee on Fire Prevention tank fire experience records covering a total of fifteen thousand tank years of service for tanks of greater capacity than five thousand barrels. The summary made indicates the occurrence of a tank fire for each five hundred and four tank years, or a fire frequency ratio per tank year of two-tenth of one per cent. If it is assumed—as appears the case in California fields—that about two-thirds of all tank fires are caused by lightning, the frequency ratio for lightning fires on the same basis would be approximately thirteen-hundredths of 1 per cent. It should be clearly understood the figures given present only the experience of a portion of the industry in a particular section. They are of value in indicating the relative infrequency of tank fires, though the losses and their prevention when possible cannot be minimized.

When a storage tank is set on fire by lightning what probably occurs is that inflammable vapors escaping from openings in the tank roof are ignited by a direct lightning discharge upon the tank structure or by means of an electrical discharge to ground induced by a lightning discharge in the vicinity. It is obvious if an explosive mixture is present in the tank an explosion will occur, otherwise a fire without explosion will result. If no inflammable vapor were to escape from a tank and thetank itself were a continuous structure, little lightning hazard would exist and the more nearly a tank approaches these conditions the less of lightning protection is required.

Structures for the storage of petroleum products vary greatly in size and type from the small container placed underground in a garage or service station to the 180,000-bbl. steel tank above ground and from the relatively small concrete tank which may provide fuel or storage at power plant or factory to enormous concrete lined reservoirs covering acres of ground and having capacities of from one to three million barrels. No universal type of protection is applicable. Storage facilities may be classed as follows:

Storage Classified

I. Above ground steel tanks
   (a) With wooden decks, sheathed with roofing felt, or combinations of roofing felt and vapor-proof or insulating materials.
   (b) With wooden decks, sheathed with light weight metallic plates.
   (c) With steel roofs, not essentially "gas-tight."
   (d) With "gas-tight" steel roofs, provided with proper vents for relief of internal pressures.
   (e) With floating roofs, of the varied types now upon the market.
II. Underground steel tanks.
III. Concrete tanks and reservoirs.

Above ground steel tanks with roofs of

(Continued on Page 205)

*Less than 1 thousand. †Estimated. ‡Cuba. §Production in previous years credited to Germany. xEcuador

Used by the World Aero Squadron.

NO-OX-ID

IRON + OX = RUST

TRADE MARK

The Original Rust Preventive

"Pictures Tell the Story"

No. 1. An application of NO-OX-ID to such equipment prevents RUST in open storage.

No. 2. Taking up and coating old trunk line with NO-OX-ID 300 miles in Louisiana.

No. 3. Applying NO-OX-ID with brush, no heating required, and rubbing with canvas. Proper method of application.

No. 4. NO-OX-ID applied to pipe under swamp conditions gives perfect protection. Moisture can not cause corrosion in the presence of NO-OX-ID.

DEARBORN SPECIAL 134 FOR SCALE

For many years Special 134 has been in successful use for complete removal of scale from jackets of gas engines, water lines, pumps, etc.—no matter how badly they are scaled. Inexpensive, rapid and easy to use. Does not injure metal.

DEARBORN CHEMICAL COMPANY
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Ludlow Double Gate Valves, because of material, workmanship and correct construction principles, outwear other valves.

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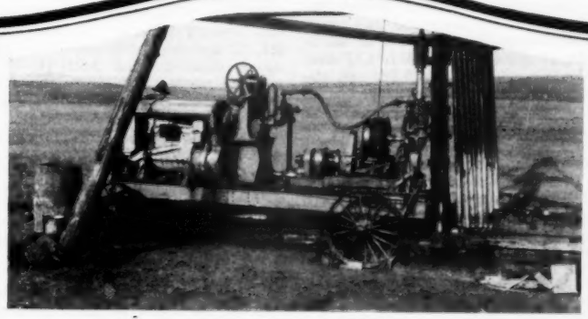

Longyear 2 N gas drill, capacity 1000 feet of 2-in. core or 2000 feet of 1-⅛-in. core.
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A New Diamond Drill Hook-up for Oil

PORTABILITY was our goal in building the gas driven diamond drill unit illustrated above. It is all connected ready for drilling and consists of our well-known Longyear No. 2 N drill, Fordson gas engine and Goulds triplex pump.

This drill unit has met with instant favor and we shall gladly furnish particulars upon request

E. J. Longyear Company
Minneapolis, Minnesota, U.S.A.

and marketing. The advantage of this change is perfectly apparent from an economic standpoint and the wonder is why it has never been put into effect. First, there would be a profit in refining and marketing, instead of a loss. Second, the residue takes less storage space to store than crude oil. Third, the residue has practically no loss by evaporation, while crude oil has a large loss and stored gasoline still larger.

The procedure of refiners in continuing the manufacture and storage of a highly perishable product or the lumping of it on the market in the face of an overproduction of said product is as indefensible as the course of producers in drilling flush fields under similar conditions.

The changes suggested will without doubt afford material aid toward changing our business within itself from a somewhat losing and chaotic enterprise into a more solid prosperous and healthy industry. The welfare of the nation demands that we continue to furnish it with the life-giving stream of oil products which may be required during the years to come, and this can be accomplished if the whole industry receives a living wage, husbands its resources and eliminates waste. To attain thsi end, we must have the cooperation of the Federal and State Government and of the American people; but we cannot go to them with altogether clean hands and ask and gain their best and friendliest cooperation until upon our own part we shall have more completely eliminated unsound economic and business conditions within the industry itself.

For our own good and for the welfare of America let us unite and coordinate the oil industry.

N. LOUISIANA-ARKANSAS

(Continued from Page 42)

and derrick up for No. 2 in Section 26-15-17.

Among the new interests which have entered the field during the past week, the Cumberland Petroleum Co. is rigging up to drill No. 1 Reynolds, 23-15-17, and Hazen and others set 10-inch casing at 65 feet in No. 1 Fincher, Section 29-15-16.

Ellis & Dumas have 500 feet of oil in the hole at 2,263 feet in No. 1 Forest City Box Co., Section 31-15-16, and the Forest Oil Co. is drilling at 2,050 feet in No. 2 J. A. Cramer, bailing casing at 2,257 feet in No. 12 and derrick up for No. 17, Section 27-15-16.

Hildreth and others have 700 feet of oil in the hole in No. 1 Mullin, Section 27-15-16, and arranging to pump at 2,310 feet; Hunt and others have 1,500 feet of oil in the hole in No. 1 Myatt, Section 22-15-17, and arranging to pump at 2,387 feet.

J. N. Jones and others are rigging up to drill No. 2 Farris in Section 34-15-15; Leon and others have a fishing job at 1,940 feet in No. 2 Berg, Section 4-16-15, and the Magnolia Petroleum Co. is drilling plug in 6-inch at 2,290 feet in No. 3 Brown; derrick up for No. 4, Section 26-15-17, and rigging up to drill No. 10 Smith, Section 31-15-16.

The Marine Oil Co. is rigging up to drill No. 3 Hays, Section 4-16-15; Marr Oil Corp. has 600 feet of oil in the hole in No. 3 Mullins, Section 28-15-16, arranging to pump at 2,263 feet, and rigging up to deepen No. 4, same section.

The Riggs Drilling Co. has 350 feet of oil in the hole in No. 3 Myar, Section 29-15-16, and arranging to pump at 2,260 feet; Ross and others are swabbing to test 20 feet of sand at 2,260 feet in No. 1 Stringfellow, Section 28-15-16.

J. S. Smith has derrick up for Shirley B-2, Section 36-15-17, and Staves and others bailling to test 10 feet of sand at 2,330 feet in No. 3 Jeffus and derrick up for No. 4, Section 26-15-16.

The Texas Co. has derrick up for No. 2 Reynolds, Section 23-1517 and rigging up to drill No. 1 and No. 2 Ward, same section; Winner and others have 700 feet of oil in the hole in No. 1 Schoolhouse, Section 20-15-16, and arranging to pump at 2,327 feet.

Webster Parish

Interest in Wester Parish development is almost equally divided between the Cotton Valley district and the Springhill territory. Cotton Valley has already been proven a bonafide oil field, with a daily production averaging 10,000 bbls. a day, while Springhill is still in its experimental stage with one 1,500-bbl. oil well, drilled by Lloyd Harris several years ago, and an important gas field developed within the past few months. It is confidently expected with the amount of drilling in progress the oil sand which was accidently struck by Lloyd Harris will be definitely located and a real pool established.

The latest newcomer in the Springhill district is J. K. Wadley, who set 12½-inch casing at 160 feet for a test on the Porter Woodley lease, Section 31-23-9.

Arkansas Fuel Oil Co. is drilling at 1,350 feet in No. 1 Frazier, Section 27-23-11, and Butler-McMurray at 2,655 feet in No. 1 Allen, Section 35-23-11.

Belchic & Laskey set 8-inch casing at 1,210 feet in No. 6 Pine Woods Lumber Co., Section 33-23-11; Fortuna Oil Co. has entered the new district and is rigging up to drill No. 1 Nickerson, Section 33-23-10.

Bethany Oil & Gas Co. set 8-inch casing at 1,180 feet in No. 2 T. R. Wiley, Section 6-22-9, and The Texas Co. is reaming to set 6-inch at 2,560 feet in No. 1 F. M. Tinsley, Section 35-23-10.

Louisiana Oil Refining Corp. has derrick up for its first test in Springhill district, No. 1 Armor, Section 21-23-9; W. L. Haehnlen, Trustee, is arrang to set 6-inch casing at 2,559 feet in No. 1 Roberts, Section 9-23-10.

Cotton Valley

In the Cotton Valley district, the Alabama Petroleum Co.'s Pardee B-1, Section 24-21-10, stands full of oil at 2,525 feet and arrangements are being made to pump, and Pardee A-3, same section, is drilling in lime at 1,890 feet. No. 1 Ramsey, Section 19-21-9, is drilling at 2,020 feet and No. 1 Smith, Section 29-21-10, set 6⅝-inch casing at 2,500 feet.

Fortuna Oil Co. is drilling at 200 feet in No. 1 Crichton, Section 19-21-9, and at 2,260 feet in No. 4 S. J. Merritt, Section 14-21-10. The Humble Oil & Refining Co. has seven rigs running on the Bodcau Lumber Co. lease, Sections 24, 13 and 28-21-10, three on the Davis in Sections 13 and 24-21-10, and derrick up for No. 1 Gray, Section 26-21-10.

Louisiana Oil Refining Corp. set 6⅝-inch casing at 2,468 feet in No. 2 Nelson, rigging up to drill No. 3, Section 28-21-10, and derricks up for No. 2 and No. 3 Gray, same section. Moffatt & Murphy are rigging up to drill No. 2 Coyle, Section 28-21-10, and Ohio Oil Co. has four rigs running and two derricks up on the Bodcau Lumber Co. land, Sections 13-15 and 27-21-10.

Palmer Corp. is trying to get a core barrel at 3,460 feet in its deep test on the Miller lease, Section 29-21-10, and derrick up for No. 1 Tillman, Section 28-21-10. S. S. Raymond and others are arranging to drill plug in 4½-inch casing at 2,255 feet in their deep test on the Coyle lease, Section 21-21-10.

Tidal Oil Co. is drilling in gumbo at 1,150 feet in No. 1 Gleason, Section 28-21-10; Oil Fields Gas Co. is drilling at 1,000 feet in Hope Estate B-4, Section 24-21-10, and at 750 feet in B-5, Section 13-21-10; Woodley Petroleum Co. tested salt water at 2,543 feet in No. 1 A. J. Hodges, Section 18-21-9, and waiting orders.

Bienville Parish

The Roxana Petroleum Corp. is drilling in shale at 1,120 feet in No. 1 Bryan, Section 30-17-6, 20 miles south of the Homer Field, about half way between Gibsland and Bienville.

Bossier Parish

In the Elm Grove district, the Arkansas Natural Gas Co. is drilling at 1,400 feet in Van Hoose A-4, Section 31-16-11, and in same section the Standard Oil Co. bailed dry at 1,905 feet in No. 4 J. T. McDade, tested half a million feet of gas at 1,917 feet, tested salt water at 1,922 and now testing again at 1,927 feet. Palmer Corp. is drilling in shale at 1,755 feet in Hodges B-6, Section 25-16-12.

In the north end of the parish, Springhill district, the Atlantic Oil Producing Co. is drilling at 1,050 feet in No. 2 Bodcau, Section 24-23-12.

Skannall and others are bailing to test at 1,897 feet in No. 1 Roscoe, Section 14-17-12, 8 miles east and a little south of Shreveport.

In the Bellevue district, the Louisiana Oil Refining Corp. set 6-inch casing at 335 feet in Fee A-18, Section 15-19-11.

Caddo Parish

In the Pine Island district, the Dixie Oil Co. is testing at 1,650 feet in No. 3 Louisiana State, Section 13-21-15 and Fortuna Oil Co. is testing at 2,195 feet in No. 13 Doan-Thigpen, Section 3-20-15.

In the Caddo Lake district, William Gross and others set 6-inch casing at 2,207 feet in No. 1 Rives, Section 5-20-16; Gulf Refining Co. drilling at 1,550 feet in No. 219 Ferry Lake, Section 22-20-16, and The Texas Co. drilling at 2,945 feet in No. 1 Federal Jeems Bayou, Section 15-20-16.

In the Rodessa district, B. T. Smith is drilling at 500 feet in No. 1 Pitts, Section 11-23-16.

D. C. Richardson is rigging up to drill on the Bostwick lease in Section 15-18-15, making a second test in the Cross Lake district, about 7 miles west of Shreveport.

In the Waskom district, Ford and others are drilling at 50 feet in No. 1 Agurs, Section 14-17-16; Fortuna Oil Co. rigging up to drill No. 1 J. H. Bryson, Section 8-17-16, and Waterman Drilling & Development Co. set 10-inch casing at 125 feet in No. 1 Hunting Club, Section 17-17-16.

Claiborne Parish

Claiborne-Lincoln Syndicate is drilling at 1,525 feet in No. 3 Fields, Section 22-19-5, 5 miles north of Arcadia.

El Dorado Chief Oil Co. is running core barrel at 2,105 feet in No. 1 McElwee, Section 13-22-7, 7 miles northeast of Homer.

J. P. Evans and others are drilling at 950 feet in No. 1 Taylor, Section 6-19-5, 10 miles southeast of Homer.

Woodley & Collins are running core barrel at 2,845 feet in No. 1 Fortson, Section 28-21-5, 8 miles east of Homer.

De Soto Parish

The Greyhound Syndicate is drilling in lime at 2,790 feet in No. 1 Pollock, Section 36-11-14, 14 miles southeast of Logansport.

Tarver and others had a gas blowout at 2,685 feet in No. 3 Palmer, Section 3-11-14, 12 miles east of Logansport, in the old Spider district.

L. V. Ulrey is drilling at 100 feet in No. 1 Robinson, Section 22-11-12, 3 miles north of Pelican.

La Salle Parish

Urania Petroleum Co. is rigging up to drill its fifth test on the Urania land, Section 18-10-2e.

Morehouse Parish

Natural Gas Producing Co. set 6-inch casing at 2,140 feet in No. 4 Tensas Delta, Section 3-21-4, and derrick up for No. 14 Crosset in Section 19-22-5. The Oil Field Exploration Co. is drilling at 1,800 feet in No. 1 Pratt, Section 35-20-5, and at 800 feet in No. 1 R. Watson, Section 13-20-4.

Natchitoches Parish

R. O. Roy, one of the pioneers in oil field development in North Louisiana, set 10-inch casing at 208 feet for a test on the C. M. Durr land, Section 27-10-10, about 10 miles east of the old Sabine oil field.

Ouachita Parish

Consumers Gas Co. is drilling at 2,163 feet in No. 1 Collins, Section 10-19-5; Ouachita Natural Gas Co. set 6-inch at 2,090 feet in No. 3 Trezevant, Section 40-20-4, and Palmer Corp., drilling at 1,675 feet in No. 2 Morgan, Section 21-19-5.

Southern Carbon Co. is drilling at 1,675 feet in No. 42 Fee, Section 7-19-5, and at 1,700 feet in No. 43, Section 31-19-5. Unted Oil & Gas Co. set 6-inch at 2,135 feet in No. 2 Cole, Section 36-20-4.

Red River Parish

Tarver and others has derrick up for No. 1 Conley in Section 2-14-10, 3 miles east of the south end of Lake Bisteneau.

Sabine Parish

L. M. Emlet is drilling at 160 feet in No. 4 on the Bowman Hardwood Lumber Co.'s lease and derrick up for No. 5, Section 8-7-12. The tests are down in the center of Sabine Parish, 2 miles west of Loring.

Arkansas—Columbia County

Phillips and others are drilling in shale at 2,450 feet in No. 1 Davis, Section 14-18-21, 7 miles south of Magnolia.

Moore and others bailed the casing dry and waiting orders at 2,165 feet in No. 1 Fullenweider, Section 12-17-22, 5 miles west of Magnolia.

Nevada County

Southern Oil Co. has taken over the well started by the Keystone Oil Co. on the Mass lease in Section 7-14-20, and set 10-inch casing at 40 feet. Ouachita Valley Oil Co. is drilling in gumbo at 1,800 feet in No. 1 Phillips, Section 30-14-20.

Smitherman & McDonald are drilling in sandy shale at 2,405 feet in No. 3 Womack, Section 10-14-21, and at 900 feet in No. 3 Drake, same section.

Zing and others have a leaking casing in No. 1 Graves, Section 22-10-23, and sanding at 1,055 feet.

S. R. SCIVALLY TO LEAVE SINCLAIR REFINING CO.

Due to the closing of the marketing office of the Sinclair Refining Co. at Tulsa, S. R. Scivally will sever his connections with that company effective January 1. The buying which the Sinclair Co. has been doing from the Tulsa office will be taken over by the Dallas, Tex., and Chicago offices of the company.

There is probably no more widely known buyer of refined products in the

S. R. Scivally

Mid-Continent Field than Mr. Scivally. During his several connections with the Union Petroleum Co. and the Sinclair Refining Co., Mr. Scivally is believed to have purchased more gasoline and other products from Oklahoma refiners and those in adjoining areas than any other single individual. Mr. Scivally expects to remain in the Southwest but has not yet announced his plans.

Production of India Is 8,000,000 Barrels Mainly in Burmah

Petroleum production in India, which averages about 8,000,000 bbls. annually, comes largely from the Singu and Yenangyaung fields of Burma, the Attock field of the Punjab, and the Badarpur and Digboi fields of Assam. Drilling is carried on by both cable and rotary outfits. The electrification of the Yenangyaung Field, and the establishment of gas-absorption plants as well as in the Singu Field, are recent improvements.

The two principal items of export from India are gasoline and paraffin wax, and these were valued at over $32,000,000 in 1923.

BRITISH GOVERNMENT INTERESTED IN CRUDE OIL

(Continued from Page 87)

supplying petroleum needs during the World War, Sir John by his masterly handling of a difficult subject, his talents as a speaker and his agreeable personality made many friends on this particular occasion. Shortly after that visit he became a director of the Anglo-American Oil Co., Ltd., and several of its subsidiary companies, and is also its technical adviser.

One of his first activities as an official of this powerful company was as a representative in the negotiations between the Anglo-Persian Oil Co. and the Standard Oil Co. (New Jersey) whereby the companies joined their interests in concessions in northern Persia. This represented a step in the later diplomacy that sought to clear up by practical means misunderstandings that were keeping alive the great international oil controversy.

Sir John is described as a striking illustration of how the great war gave the scientist the opportunity to emerge from the twilight of academic aloofness into the full glare of world events. In 1914 he was Professor Cadman. His eminent activities during the war included chairmanship of the board that rationed the Allies as to their oil needs; one of his merited rewards, knighthood.

He, as chief executive officer of the British Petroleum Department, with Philippe Berthelot, director of political and commercial affairs at the French Foreign Office, is credited with drawing up the famous San Remo agreement, which resulted in a long series of protests by the American Government against its closed door revelations, but later is found as a conspicuous figure in working out a policy of American inclusion in Mesopotamian rights, which the San Remo agreement reserved exclusively for the British, the French and the Royal Dutch.

Briefly, Sir John Cadman was and still is, according to those who have closely followed his activities, the real power behind the shaping of British oil policy.

In as much as Sir John Cadman comes from a coal family and his first conspicuous achievements as well as many late achievements have been with respect to coal; furthermore, in as much as he is a foremost scientist and educator, we refer correctly, we believe, to his collective eminence.

He is now a member of the council of the Department of Scientific and Industrial Research of His Majesty's Privy Council, and is technical adviser to the Udi Collieries of the Government of Nigeria and several groups of collieries in the Midlands of England, as well as a member of various Government committees dealing with coal mining problems.

Sir John Cadman was educated at Armstrong College, Newcastle-on-Tyne, and from an early age held managerial positions in coal mines in England. Subsequently, he became one of His Majesty's Inspector of Mines, serving in Scotland and also in the Midlands of England.

During the time he was in Scotland he made his first entry into the petroleum industry, and in this work he has become one of the leading experts of the world. In 1904 he was seconded from His Majesty's Home Office by the Colonial Office for service in Trinidad where he organized a Mines Department and developed a petroleum industry which owes its inception to his activity. For 13 years he was professor of mining at the University of Birmingham, and during that period he served on numerous Government committees. Thus he carried out a special research on ventilation for the Royal Commission on Mines in 1907-8, which had far reaching results.

Within recent years he has played a very important part in the many troubles through which the coal industry has passed, particularly at the conclusion of the war when he was adviser to His Majesty's Government, and during the time when the Government relaxed its control over the industry.

In 1921 he was elected president of the Institution of Mining Engineers, and was re-elected in 1922 for a further 12 months.

During the time he was professor of mining at Birmingham University he instituted a petroleum course which ranks as second to none in the world and students who were under him there are making great progress.

In 1915 he was a member of a royal commission which visited Persia in connection with the Anglo-Persian Oil Co., and it was upon this commission's advice that the British Government became a large shareholder in the company.

In the early part of the war petroleum supplies for the use of the Allied armies in the field and the British Navy were in a very parlous condition, and at one time there was only a 10 days' supply of petrol for the British Army. The position was so acute at that time that the British Government decided to constitute a Petroleum Department and Sir John Cadman was appointed chief executive officer.

The United States of America was one of the largest sources of supply and the result was that it was necessary to form an international committee on which representatives of the Allies and United States served, with Sir John Cadman as its chairman.

Viscount Long in the House of Lords on April 25, 1923, in paying tribute to the work done by Sir John Cadman, remarked: "If ever a man by his own personal efforts and abilities, contributed almost more than any other individual to the ultimate success of our arms, it was the man who put oil in sufficient quantities at the disposal of our fighting forces and our commercial services."

Sir John Cadman is a past president of the Institution of Petroleum Technologists of Great Britain and was vice president of the Empire Mining and Metallurgical Congress which took place in June, 1924, at the British Empire Exhibition, Wembley.

Represents Government on Anglo-Persian Board

Lord Inchcape's interest in the oil industry embraces directorships of the Anglo-Persian Oil Co., Ltd., Bakhtiari Oil Co., Ltd., and North Persian Oils, Ltd., being a director appointed by the British Government which holds controlling interest; also of the D'Arcy Exploration Co., Ltd., First Exploitation Co., Ltd., Scottish Oils, Ltd., and Tanker Insurance Co.

The Right Honorable Viscount Inchcape of Strathnaver, G. C. S. I., G. C. M. G., K. C. I. E., etc., is the senior partner in the firms of Messrs. Mackinnon, Mackenzie & Co., Calcutta, Bombay, Karachi, Colombo, Hong Kong, Shanghai, Kobe and Yokohama; Messrs. Macneill & Co., of Calcutta; Messrs. Macdonald, Hamilton & Co., of Melbourne, Sydney, Fremantle and Brisbane, and Messrs. Gray, Dawes & Co., and Duncan Macneill & Co., of London.

He is chairman of Australasian United Steam Navigation Co., Ltd., (also managing director); Binny & Co., Ltd., British India Steam Navigation Co., Ltd., (and managing director); Bulloch Brothers & Co., Ltd., Central Queensland Meat Export Co., Ltd., Ceylon Wharfage Co., Ltd.; Eastern & Australian Steamship Co., Ltd.; Eastern Coal Co., Ltd.; English Coaling Co., Ltd., Middle East Development Corp., Ltd.; P. and O. Banking Corp., Ltd.; Peninsular and Oriental Steam Navigation Co. (and joint managing director), and Walker Brothers (London), Ltd.

He is a director of Anderson, Green & Co., Ltd.; Atlas Assurance Co., Ltd.; Burns, Philp & Co., Ltd.; Ceylon Steamship Co., Ltd.; Cyprus Asbestos Co., Ltd.; Doodputlee Tea Co., Ltd.; Eastern Extension, Australasia and China Telegraph Co., Ltd.; Eastern Telegraph Co., Ltd.; Euphrates and Tigris Steam Navigation Co., Ltd.; Fishguard and Rosslare Railways and Harbor Co.; Great Western Railway Co.; Lloyds and National Provincial Foreign Bank, Ltd.; National Provincial Bank, Ltd.; Rivers Steam Navigation Co., Ltd.; Royal Bank of Scotland (extraordinary director); Salonah Tea Co., Ltd., and Steamship-owners' Coal Association, Ltd.

He is a vice president of the Suez Canal Co., and a member of the Council of the Corporation of Foreign Bondholders.

Lord Inchcape was educated at Arbroath, Elgin, and in 1874 went to India to join the staff of Mackinnon, Mackenzie & Co., of which firm he became a partner a few years later. In 1891 he became a member of the Legislative Council of India, and in 1897 was appointed a member of the Council of India in London, on which body he served until 1911, when he was raised to the peerage as Baron Inchcape of Strathnaver.

He had been created a Knight Commander of the Indian Empire in 1894; Knight Commander of the Star of India in 1910, and a Knight Grand Commander of the Order of St. Michael and St. George in 1902.

Lord Inchcape has for many years served successive British Governments as adviser or negociant on a variety of important matters.

He served on a committee, appointed by the Secretary of State for India, to inquire into the expediency, or otherwise, of retaining the Cooper's Hill College, a seminary originally instituted by the Honble East India Co. for the training of recruits for its staff in India.

He was chairman of the committee (1907) in regard to the finance and working of Indian railways; and a member of the committee to inquire into the Military Family Pension Fund.

In 1911, at the request of the Secretary of State, he again visited India to settle disputes between the railway companies and the railway board.

He served (1898-99) on the committee appointed by the Government to inquire into the question of increasing the commercial intelligence provided by the Board of Trade; and on Lord Jersey's committee (1903-4), to inquire into the status and working of that board, and the local Government board.

He became His Majesty's Special Commissioner and Plenipotentiary to negotiate and agree on a new commercial treaty with China, and after spending a year in that country, signed the new treaty at Shanghai on September 5, 1902.

On his return to England, he served on a committee which was appointed by the Secretary of State for Foreign Affairs, to report on the possibility of improving the Consular Service of Great Britain.

Lord Inchcape was appointed (1903) one of the representatives of His Majesty's Government, to confer with the representatives of the United States and Mexican Governments, on the question of introducing the gold standard into Mexico and China.

He was a member of the committee appointed by the Board of Agriculture to inquire whether a preference was given by English railways to foreign produce conveyed over English lines; and His Majesty's Treasury, to inquire into the working of Government workshops (1907), and (1906-7) to consider the advisability of a national indemnity for ships and cargo in time of war, subsequently becoming on the outbreak of war (1914), a member of the resulting War Risks Advisory Committee.

During the war, his activities embraced: The committee appointed to agree the rates of hire for vessels chartered by His Majesty's Government (chairman); the Committee on Food Production; the Imperial Defense Committee; Lord Cunliffe's Committee on the Currency Question; Casual Labor Committee; Port and Transit Committee appointed to expedite discharge of vessels in British ports (chairman); Contracts Committee (chairman); Chamber of Shipping of the United Kingdom, 1918 and 1919 (president); Treasury's Committee on the question of purchasing gold directly from the mines (chairman); Committee of inquiry into banking amalgamations as affecting public policy and of the resulting committee to control same (chairman); Air Ministry's Advisory Committee on Aviation; Commercial Intelligence Committee.

Further, he took over all the British Government's standard ships and sold them, realizing for the exchequer £35,000,000 at a total sales cost of only £850.

The disposal of the 418 ex-enemy ships allotted to Great Britain, under the Treaty of Versailles, was also undertaken by Lord Inchcape, and realized £20,076,216 at an administrative cost to the British Government of 2s. 7¾d. per £100.

The Mesopotamian war craft were also sold by Lord Inchcape, who, at the request of the Government, specially visited India for the purpose. The proceeds realized £1,080,000.

In addition, he undertook, on account of the Government, the sale of all prize vessels.

At the end of the war, he became a member of the National Economy (Geddes) Committee, and in the winter of 1922-3, at the request of the Indian Government, again visited that country as chairman of the Indian Retrenchment Committee.

In June last Lord Inchcape was created a Knight Grand Commander of the Star of India, an honor following within a few months of his elevation in the peerage to the rank of a viscount.

Sir John T. Cargill

Son and for a long time right hand man of the founder of the Burmah Oil Co., Sir John T. Cargill, Bart., has taken a very active part in the development of the oil industry both in India and Persia. His interests in the oil industry embrace the chairmanship of Assam Oil Co., Ltd.; Burmah Oil Co., Ltd., and Scottish Oils, Ltd.

Sir John is also a director of Anglo-Persian Oil Co., Ltd.; Broxburn Oil Co., Ltd.; Dalmeny Oil Co., Ltd.; Oakbank Oil Co., Ltd.; Pumpherston Oil Co., Ltd.; Scottish Oil Agency, Ltd., and United British West Indies Petroleum Syndicate, Ltd., and of various other companies, including Anglo-Sumatra Rubber Co., Ltd.; Caledonian Trust, Ltd.; Cargills, Ltd.; Changkat Salak Rubber & Tin, Ltd.; Clydesdale Investment Co., Ltd.; Scottish Western Investment Co., Ltd.; Scottish Widows Fund Life Assurance Society (extraordinary), and Second Scottish Western Investment Co., Ltd., and the chairman of Hemerdon Mines, Ltd.

He is the senior partner in the firms of Messrs. Milne & Co., East Indian merchants, of Glasgow and London, and Messrs. Findlay, Fleming & Co., of Rangoon. He served his apprenticeship with the latter firm from 1890 to 1893 when he returned to Glasgow and became the right hand man of his father who was the founder of the Burmah Oil Co. Sir John was made a director of this company in 1902 and in 1904, on the death of his father, succeeded to the chairmanship.

Sir John was educated at the Glasgow Academy, and went to Burmah in 1890 where he remained for three years. He subsequently visited that country and also India in 1905-6, 1912-13 (his contemplated trip in 1914-15 being stopped by the war), 1920-21 and 1924-25.

Sir John, who was created a Baronet in 1920 for public services rendered to the country, founded, in November, 1919, the Cargill Chair of Applied Physics at the Glasgow University (gift of £20,000.)

Sir Frederick W. Black

Sir Frederick W. Black, K. C. B., widely known in this country among the oil fraternity, is imbued with a firm faith in the civilizing mission of the Anglo-Saxon peoples and especially in the possibilities for the world's good of a cordial friendship between Great Britain and America. He is a member of the English Speaking Union.

Sir Frederick Black is a director of two of the subsidiary companies of the Anglo-Persian Oil Co., as well as of the Steaua Romana Oil Companies (British and Bucharest.) From 1919 (after his retirement from the British Admiralty Service) to 1923, he was one of the managing directors of the Anglo-Persian Oil Co.

Sir Frederick entered the British Civil

Cotton Valley district and the Springhill hill district, the Atlantic Oil Producing Lumber Co.'s lease and derrick up for 000 in 1923.

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THEY knock the girl who is beautiful but dumb, but she isn't the girl I am sorry for.

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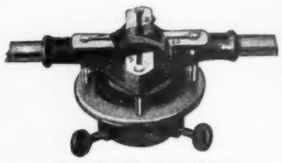

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Service in 1880 and was transferred from the Colonial Office to the Admiralty in 1883, serving at various stations (Malta, Ceylon, etc.) For a time he acted as Additional Police Magistrate in Ceylon. From 1903 to 1906 Sir Frederick was the Director of Naval Stores at the British Admiralty, afterwards becoming Director of Naval Contracts.

During his tenure of that office the use of fuel oil in the British Navy was in process of development and Sir Frederick became well known to American and other oil producers.

In August, 1915 (a year after the outbreak of war) after a strenuous year at the Admiralty, Sir Frederick was lent by the First Lord (now Earl Balfour) to the newly formed Ministry of Munitions under Lloyd George. His position there was that of Director General of Munitions Supply during the period of active organization of gun and shell production and filling of shell. Incidentally, this brought him into very close touch with various interests in the United States of America for the supply of materials of many kinds.

In March, 1917, at the request of the Government of India he was sent with technical assistants, by the Ministry of munitions, to cooperate with officers of the Indian Government in respect of the local manufacture of munitions and supplies.

On returning to England in June, 1917, he became a member of the Ministry of Munitions Council. His duty included special attention to the war supplies of the French, Belgians, Italians, Russians and other allies. For his services to these nations he received the distinctions of Commander French Legion of Honor, Commander Belgian Order of the Crown and the Russian Order of Saint Anne (first class.)

In July, 1917, he was sent to America to join Lord Northcliffe's British War Mission, for special care of supplies of petroleum products for the war. This was his second visit to the United States of America and Canada. His previous visit had been some 20 years earlier on a round trip the world tour for the British Admiralty.

On this occasion of his association with Lord Northcliffe's mission, he was able to extend his acquaintance with the prominent oil men throughout America during his stay of over a year in New York, especially in his daily cooperation with the American National Petroleum War Service Committee under A. C. Bedford. In their company he visited the principal oil fields and refineries of the United States.

Between Lord Northcliffe's return to England in November, 1917, and Lord Reading's arrival in February, 1918, Sir Frederick was acting chairman of the British War Mission. He became well known as a speaker at many gatherings in New York, New Jersey, Kansas, Tulsa, Houston and elsewhere, always as a strong advocate of special attention to the needs of the allied navies, and of the conservation of supplies of motor spirit by the restriction of "joy riding" in war time.

He was elected an honorary governor of the Twilight Club (arts and sciences) of New York, a distinction which had been previously accorded to only one Englishman, viz., the well known philosopher, Herbert Spencer.

Sir Frederick is a graduate in arts in the University of London, and, in his leisure time, has taken a very keen interest for many years in the education of working men and women. More recently he has given special attention to all educational matters relating to the petroleum industry.

He served for two years (1919-1920) as president of the British Institution of Petroleum Technologists," and is still an active member of the council of that institution. He has lectured on oil subjects on various occasions, especially to the Sir John Cass Technical Institution of London, and has published a number of papers on petroleum production, e.g., in 1919 his presidential address to the British Institution of Petroleum Technologists was on the subject of "War Problems Relating to Petroleum Supply."

Sir Frederick also wrote the "Foreword" to the current issue of the late Sir Boverton Redwood's treatise on petroleum, the first chapter of a book called Petroleum Industry, published by the above mentioned institution, also Chapter VIII on the "World's Resources of Petroleum and Fuel Oil," of Brassey's Naval and Shipping Annual for 1921-1922. More recently one of his papers was read at the Mining Congress at Wembley, in June last on the subject of "Bulk Distribution of Oil; Depots and Storage."

It might be interesting to add that at a farewell luncheon given to Sir Frederick in New York, in August, 1918, it was genially remarked by the chairman of the gathering. "Since Sir Frederick Black has been in America, we have learned considerably more about that great institution, the British Navy."

Sir Edward Hussey Packe

Sir Edward Hussey Packe, K. B. E., is a director in the Anglo-Persian Oil Co., and affiliated companies upon appointment by H. M. Government. The Government interest, which he represents, is a controlling interest.

His interests in the oil industry embrace directorships in the following companies, to the first nine of which he was appointed by the Government:

Anglo-Persian Oil Co., Ltd.; Bakhtiari Oil Co., Ltd.; British Tanker Co., Ltd.; D'Arcy Exploration Co., Ltd.; First Exploitation Co., Ltd.; National Oil Refineries, Ltd.; North Persian Oils, Ltd.; Scottish Oils, Ltd.; Tanker Insurance Co., Ltd.; British Oil Bunkering Co., Ltd.; British Petroleum Co., Ltd., and Britannic Estates, Ltd.

Sir Edward was educated at Eton and entered the Civil Service, holding in turn the position of Assistant Private Secretary to the Marquis of Lansdowne at the British War Office, the Earl of Selborne at the British Admiralty and the late Earl Cawdor.

During the war, Sir Edward was attached to the Admiralty where he distinguished himself by the valuable services rendered to the First Lords: Earl of Balfour and Lord Carson, to whom he acted as Assistant Private Secretary, and Sir Eric Geddes and the late Viscount Long, to whom he acted as private secretary.

For such services, Sir Edward was created Knight-Commander of the Most Excellent Order of the British Empire and decorated by the French and Italian Governments.

CHRISTMAS REMINDER

A reminder that Christmas is almost here and that a thousand and one things need to be done before the holidays, has been sent to the trade in the form of an illustrated two-color circular by the National Meter Co., of New York City. Pictures of National meters of 1924, and some history of the company which started making the "Gem" meter in 1870, are included.

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Although the Oil Industry was not going at top speed during the past few months advertisers informed us that the Classified Wants Section brought them more business than they could handle.

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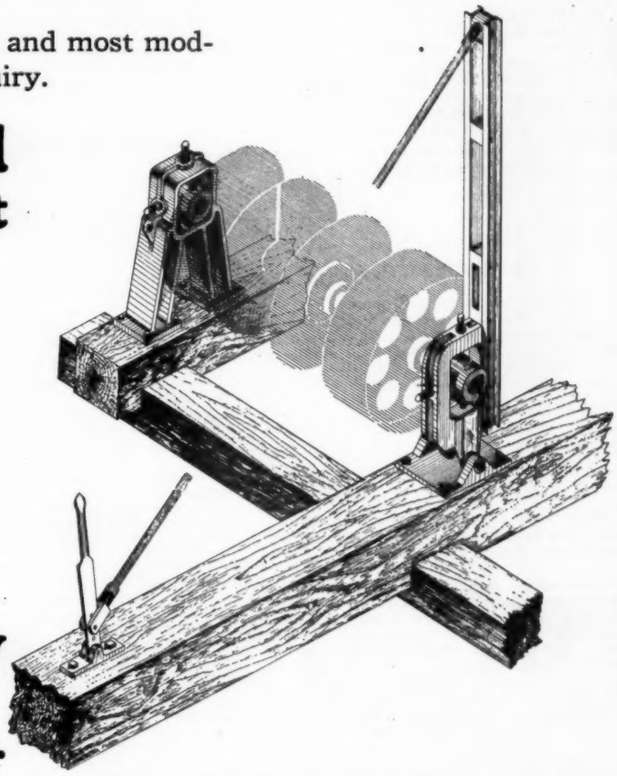

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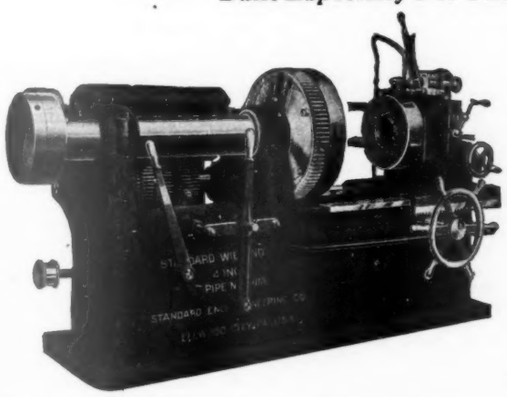

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OIL EXCHANGE & BOARD OF TRADE
Farmington, New Mexico

WORTHAM A FIELD OF UNUSUAL FEATURES

(Continued from Page 35)

1 Ferguson is drilling. The Gulf has 4 derricks up on the Ferguson, and No. 1 is drilling. The Humble Oil & Refining Co.'s No. 1 Finch is spudding. The Boyd Oil Co. has a derrick up for No. 1-B Smith; Gulf Oil Production Co. 3 derricks up on the Wilson farm; Boyd Oil Co. 2 derricks on the Wilson A farm; and 3 on the Smith B lease; and 1 on the Wasson farm. Collins & Wheelock will soon be finished at No. 1 Wasson and are ready to start No. 2. Strube & Strube's No. 1 Lindley was close to 2,000 feet. The Gulf Production Co.'s No. 1 Lindley was drilling at 1,800 feet and rigs were up for Nos. 2 and 3. The Humble Oil & Refining Co. had started drilling on No. 1-B Lindley; the Simms Oil Co.'s No. 1 Monning was drilling at 500 feet; the Boyd Oil Co.'s No. 1 Manning was drilling at 1,800 feet. The Godley Oil Co. had started drilling No. 1 Manning. The Humble Oil & Refining Co. was close to completion in wells on the Lindley and the Ferguson farms and had started No. 2-A Lindley. The Marland Oil Co. was drilling at 1,900 feet in No. 1 Simmons. The Boyd Oil Co. had set casing at 2,893 feet in No. 3 Simmons and was drilling Nos. 2, 5 and 6 at varying depths. The Humble Oil & Refining Co. was in chalk at 2,277 feet in No. 1-A Crouch; was bailing at 900 feet in No. 2-A Crouch, and drilling at 800 feet in No. 3 Crouch; the same company's No. 1 Ella Dodd was at 1,160 feet; No. 1 Poindexter at 1,087 feet; J. K. Hughes Oil Co. was drilling in soft chalk at 2,150 feet. The Kirby Petroleum Co.'s No. 1 Wright was drilling at 2,300 feet. The Boyd Oil Co.'s No. 6 Simmons was drilling at 1,000 feet; No. 4 was drilling at 2,708 feet. The Marland Oil Co.'s No. 2-A Simmons was at 1,850 feet, and No. 1-A at 1,670 feet. Hughes' No. 2 Simmons was drilling at 1,430 feet; the Atlantic Oil Producing Co.'s No. 1 Edwards was drilling at 1,241 feet. Carter & Lytle's No. 3 J. J. Manning was in chalk at 2,370 feet and their No. 1 Edwards was drilling at 800 feet. The Kirby Petroleum Co.'s No. 1 Wright was drilling at 2,400 feet, and No. 2 at 2,596 feet. The Humble Oil & Refining Co.'s No.1-A Crouch was at 500 feet. E. L. Smith's No. 1 Beal was at 2,600 feet; Southern Exploration Co. was drilling at 650 feet; Simms Petroleum Co.'s No. 1 Simmons had reached a depth of 1,600 feet. The Mutual Oil Co was drilling at 2,495 feet in No. 1 J. J. Manning. The Gulf Production Co.'s No. 1 Simmons was drilling at 1,000 feet. Bass and others have started drilling No. 1 Simmons. The Kirby Petroleum Co. was drilling at 825 feet in No. 1 Chancellor. The Southern Exploration Co.'s No. 2 Wright is drilling at 800 feet. The Humble Oil & Refining Co.'s No. 2 R. G. Poindexter was below 1,100 feet. The Humble Oil & Refining Co. had two derricks up on the Crouch farm. The Rio Bravo Oil Co. was drilling Nos. 1 and 4 on the H. & T. C. right of way 2,280 feet and 500 feet, respectively. The Kirby Petroleum Co. had started drilling No. 1 Watson, an offset to its big well on the Bounds farm. E. L. Smith had a fishing job in No. 1 Beall. This well was expected in by Monday. It was regarded as a very important test because of its supposed closeness to the fault line. The Pure Oil Co. was drilling at 2,380 feet in No. 1 Bounds and at 780 feet in No. 2 Bounds. No. 3 is a derrick up; H. Moss' No. 15 Simmons was drilling at 1,400 feet. The Hughes Development Co.'s No. 1 Simmons had set casing at 2,899 feet in lime.

The next wells due for completion are the Boyd Oil Co.'s No. 3 Simmons, which set casing at 2,893 feet; the Hughes Development Co.'s No. 1 Simmons, which set pipe at 2,899 feet, and the Boyd Oil Co.'s No. 4 Simmons, which was close to the top of the sand, and E. L. Smith's No. 1 Beall, which was in the sand.

There are a number of scattering rigs up and in the course of construction, some of them believed to be too much either to one side or the other of the streak. In the town of Wortham a town lot development has been started on properties which are supposed to be too far west of the fault to promise anything better than a dose of salt water in the down-throw of the structure, in which the Woodbine sand lies about 500 feet below the level on the up-thrown side.

W. L. KISTLER RESIGNS PRESIDENCY OF P. & R.

W. L. Kistler, who has been connected with the Producers & Refiners Corp. in an executive capacity since its organization seven years ago, has resigned as president, effective November 15, 1924.

Mr. Kistler states that for some time past he has been desirous of entering the oil business for himself but has delayed making the change as he disliked to sever the pleasant business relations existing between himself and his associates. However, now that the Prairie Oil & Gas Co. has obtained control of the Producers & Refiners Corp., he feels the larger company with its vast resources will be able to carry on the expansion program of the Producers & Refiners Corp.

W. L. Kistler

Mr. Kistler, who has been connected with the oil industry in the Mid-Continent Field since 1905, states he has made no plans beyond the fact that he will enter the oil game for himself after he has taken a much needed vacation.

ABSORPTION GASOLINE STRONG ON PACIFIC

LOS ANGELES, Cal., Dec. 12.—The two outstanding items in the Pacific Coast market are the continued strength of absorption natural gasoline and the actual introduction of Standard Oil's new Red Crown gasoline, foreshadowed a week ago.

Within the past four or five days, three absorption gasoline contracts were closed in the Los Angeles district at a price of 3 cents under retail service station gasoline without tax. These contracts were reported to extend from one to three years. In one instance the differential decreases from "3 cents under" to "2 cents under" in the event that retail motor gasoline goes to 18 cents without tax a level likely to be reached within the next year. In another instance the contract provides for indefinite upward revision in line with the stable spot market.

It is reliably reported the Union Oil Co. of California is contemplating the marketing of a blended motor gasoline. This company is now the only large Pacific Coast marketer not putting out such a product.

Some substantial sales of fuel oil have been reported within a few days and the fuel oil market is showing considerable strength. No price changes have come to light. All other products are featureless.

CALIFORNIA'S TANK FIRE EXPERIENCE

(Continued from Page 198)

wood covered with roofing felt have been used for many years in large numbers and the evaporation and fire losses have been accepted apparently as a necessary evil. Modern conservation methods are in many sections rapidly eliminating this type of tankage and the wooden roofs are either being replaced with steel roofs made vapor tight, or they are being covered with tight insulated covers of the "built-up" type, sealed to the tank shell at the roof circumference, and in some instances provided as a measure of lightning protection, with a network of conductors placed above the roof and well grounded.

It is said extensive laboratory tests indicate the tight insulated roof, with a grounded wire network above, is practically immune from lightning attack.

Steel tanks with wooden decks covered with light weight steel plates have been widely used. The plates have usually been secured to the deck by nailing, and the joints between plates have been made by lapping plates and nailing the joints or by the use of flat or standing seams, either soldered or folded together. Roofs of this sort, unless great care has been taken to join successive plates together in excellent electrical contact, and to tightly join the whole metallic roof cover to the steel tank shell, have been and still remain fruitful causes of lightning fires. The metallic sheet not grounded and lying upon the wooden deck has a very considerable capacity, and a lightning discharge in the vicinity of the tank readily induces a discharge across a convenient gap to ground, igniting flammable vapors which may be escaping from the tank. For the lightning protection of tanks with this type of roof a well known system used particularly in the Mid-Continent fields provides copper wire conductors lying upon the roof, bonding the plates together and to the tank shell.

Steel Roofs

Subdivisions (c) and (d) are intended to cover steel tanks with roofs of relatively heavy steel plate, supported upon structural steel framework, the former division including tanks with roofs that may have been intended to be reasonably tight, but still leak some flammable vapors; and the latter the modern type of steel storage tank with closely riveted or welded roof, equipped with tight gauging openings, manhole, winch box or cable inlets, and the proper vents to relieve internal pressure arising from emptying or filling the tank or from breathing. A considerable effort has been made by various investigators to obtain authentic records of fires resulting from direct lightning discharges upon such steel tanks with gas-tight steel roofs. Thus far no such authentic record appears. Roofs leaking flammable vapors or explosive mixtures of gas and air are obviously dangerous and tanks with such roofs can conceivably be readily fired by a direct lightning stroke. The gas-tight steel roofed tank with all roof openings closed save a properly designed and flame-protected vent, and with all its metallic parts and connections in such close contact as to provide little electrical resistance between them probably presents the minimum lightning hazard of all the types of above ground tanks thus far mentioned. In one of our western fields where there were heavy and repeated losses from lightning fires of steel tanks with ordinary wooden roofs it is understood replacement of wooden roofs with gas-tight steel roofs has resulted in the practical elimination of the lightning hazard. There seems, however, to be present in the minds of electrical engineers of high standing some question whether an explosive mixture in such a tank may be ignited by a discharge induced within the tank by a direct stroke of lightning upon the roof. Lightning conditions are now readily reproduced with lightning generators in the laboratories of electrical manufacturers and cooperation of the oil industry with them in research would be of great value.

Floating Roofs

Within the past few years floating roofs of several types have been placed upon the market. It is claimed for these roofs that they minimize vapor losses and are absolutely fireproof. No record of experience with such tanks struck by lightning is at hand. In certain types of such roofs the steel roof itself appears to be reasonably in contact with the shell of the tank and may thus accumulate no charge. In other types there appears opportunity for the inductive effect which would accompany lightning discharges in the vicinity. However, if such tanks lose little vapor at the contact between roof and shell and all other openings are closed there may be no great danger of lighting damage.

Underground steel tanks, almost entirely closed on account of their buried condition, are probably entirely immune from lightning hazards. Concrete reservoirs usually are built with continuous sheets of woven metallic reinforcing well bonded together. While such reinforcing is ordinarily intended to be entirely surrounded by the concrete it is probable portions of it lie in direct contact with the ground and therefore the whole metallic system may be grounded. The wooden roofs of such reservoirs, however, usually covered with roofing felt, are rarely vapor tight. A direct lightning stroke upon such a roof would almost surely result in ignition, and the presence of metallic bodies upon such roof presents the same opportunity for danger as may exist in the ordinary wooden roofed steel tank.

To minimize lightning hazards it is necessary so far as possible to avoid vapor losses, or at any rate to discharge flammable vapors only through openings properly guarded against flame propagation, and the electrical conditions affecting such storage should be carefully studied and efforts made to avoid all capacity or condenser effect. There are many devices available for the prevention of flame propagation through openings, but additional study may develop more satisfactory devices and cooperation of those interested will be of great assistance.

OIL SECURITIES LEAD DECLINE IN MARKET

(Continued from Page 192)

Mollihan; chairman of the board, W. S. Fitzpatrick.

Prairie Declares Dividend

The Prairie Oil & Gas Co. has declared its regular quarterly dividend of $2 per share, payable on January 31, 1925 to stockholders of record on December 31, 1924. The announcement was made Monday.

Caddo Oil Co.

The Caddo Central Oil & Refining Corp. and the Caddo Tank Car Corp. report gross revenue of $1,386,011 for the quarter ended September 30 and a deficit of $166,627 after all expenses, charges and reserves. For the nine months ended September 30 the company reports gross revenue of $4.628,361, and after all expenses, charges and reserves for depreciation, depletion and adjustments a deficit of $306,051. James D. Williams, vice president, says a tentative plan of reorganization has been agreed upon.

PRESENT PROGRESS IN PERSIAN OIL FIELD

(Continued from Page 130)

besides carrying out extensive additions to the existing ones.

"To assist further in accelerating the movement of our fleet, we have undertaken to provide the Iraq Government with the finance necessary to enable it to dredge the bar at the mouth of the Shattel-Arab. The total cost of the

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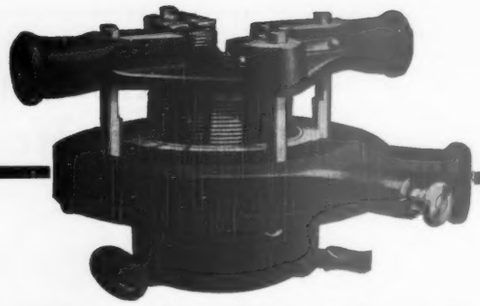

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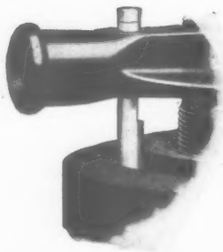

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scheme is estimated at £450,000, and payment of interest and repayment of capital is to be covered by dues which are to be levied by the Basra Port Authority. Two powerful dredges of the latest type, and costing £250,000, have already been built for this work. One of these has already arrived at the Persian Gulf, and the other is just about to start from this country. If the scheme is successful, it will result in a very large economy in the direction of less lighterage and a three- to four-days quicker turn round for our tankers.

Operations Elsewhere

"As regards the Argentine, I am very pleased to be able to inform you that, nothwithstanding my somewhat gloomy predictions of last year, we have had some much more favorable developments recently. Up to date we have produced a total of 28,900 tons of oil, and since August 15 we have produced and sold about 18,000 tons at satisfactory prices. We have a number of wells drilled which are capable of producing on a much larger scale than this, but until we can get some necessary short pipe lines laid and further tankage erected we cannot deal with the whole of the production now available. Although the lives of these wells may not be comparable with those in Persia, there is every reason for anticipating that we shall be able to produce sufficient oil in the Argentine thoroughly to justify our entry into that country.

"We have now in operation about 700 miles of pipe lines, a large portion of them being of 10 inches or more in diameter, 1,510 storage tanks situated in various parts of the world and 382 boilers and 31 boiler houses. We have nine separate refineries, situated in different parts of the world. Among our buildings we have 180 workshops and factories. We have in connection with our distributing organizations 685 bulk oil installations, including 48 ocean installations—installations erected at various ports of different parts of the world—and 708 subsidiary installations. We provide employment for over 50,000 people, including 20,500 of British nationality. We have 164 miles of railways situated in and outside our works, 71 locomotives, and 3,462 rail tank cars and wagons. We have for road transport 1,847 motor lorries, motor tractors, and tank cars, apart from a large number of horse and mule drawn vehicles. Our fleet now amounts to a total of 333 vessels of all descriptions, all fully employed, including 67 tankers, nearly all built within the past eight years. To accommodate the vessels and to handle the cargoes they carry, we have built or acquired no less than 89 jetties and wharves at the various ports where they call. For the carrying on of the different operations of our business—producing, refining, storing and distributing—we have had to purchase tens of thousands if acres of land in the various countries where these operations are being carried on.

"Since we first became a revenue-producing concern, in 1914—only 10 years ago—we have provided out of our earnings a total of no less than £19,000,000 for expenditure of a capital nature, in addition to paying out the sum of over £9,250,000 in dividends and debenture interest.

British Refineries

"At our Llandarcy (Wales) refinery a considerably larger throughput has been dealt with, and very gratifying results have been shown both in the quality of the products obtained and in the percentages of yield, and also in the direction of reducing working costs.

"At Grangemouth the refinery which was being erected by Scottish Oils, Ltd., for dealing with Persian crude has been completed and has for some months past been in full operation. Here also the results have been of a most gratifying character, showing in some respects, owing to the lower average temperature and other causes, an improvement even on those obtained at Llandarcy.

"I may mention here that further experience gained at these refineries more than ever confirms our anticipations in regard to the great advantages of home refining. Apart from the many other advantages which I have previously indicated, the reduction in evaporation and consequent larger yield of the lighter and more valuable products, the gain from which much exceeds our original estimates, alone more than justified us in having taken what was regarded by some of our critics as a novel and dangerous departure. Another important advantage that we gain is that with the constant care and supervision which our research chemists are in a position to give at close quarters to our refining processes we are able to produce motor spirit and other products of a much better and more uniform quality than is practicable when the refining is carried on in a bad climate and thousands of miles away from the countries of consumption. We can, in fact, now claim that as a result of this closer and more scientiffic attention to refining we produce the best and most uniform quality of spirit at present on the market.

"The refinery which was being erected in Australia by our associated company in that country—the Commonwealth Oil Refineries, Ltd.—was completed some months ago, and its products have now been introduced on the Australian markets.

Distributing

"In the earlier part of my remarks I made a passing reference to the 'rate wars' which have been waging in some of these markets in which we are established. These are, unfortunately, characteristic of the oil trade. In view of our favored position in regard to costs we can, however, regard them with equanimity, particularly bearing in mind that no one—no matter what the objective may be—can carry on business indefinitely at a loss. The best protection against this form of competition is, of course, to be established in as many markets as possible so that our competitors may not be able to make good in any one or more markets what they lose in others. This is the policy we have been pursuing, and must, of course, continue to pursue.

Future of Oil Prices

"As to the probable future course if prices for petroleum products, it is, as I said last year, always dangerous to prophesy. At that time it looked as if consumption were overtaking production. This would have happened had it not been for the bringing in of some new fields in the United States, and for the reckless system of drilling obtaining in that country, which results from a large number of competing producers being able to operate at the same time in one field, regardless of the life of the field or of market consideration. The combined effect of these causes was—temporarily only, I think—to again bring production ahead of consumption. On the other hand there has been an enormous increase all over the world in consumption of petroleum products, sufficient nearly, if not quite, to counterbalance the increased production, and now that the production of crude has again begun to decline there is every reason for believing that, subject to no prolific new fields being discovered in the near future, the barometer of oil prices has reached its lowest point, and that any change will be in the 'fair weather' direction. The weakness of prices in the United States during the past few months has, I should point out, not been due so much to the growth of production as compared with consumption as to the want of sufficient storage accommodation, for both crude oil and products to meet the expanding trade, since stocks in that country, relatively to its increased consumption and exports, show an appreciable decline on the figure at which they stood when prices were on a higher level. This is, however, a difficulty which is being daily overcome, and when the tankage in that country has been sufficiently extended, the forced sales which have been so marked a characteristic of the American market for some time past must necessarily cease and prices be reestablished on a basis more consistent with the world's average cost of production, because in this respect we stand, as I have previously pointed out, in an exceptionally favored position, owing to the unique productivity and life of our wells and to the very high quality of our crude.

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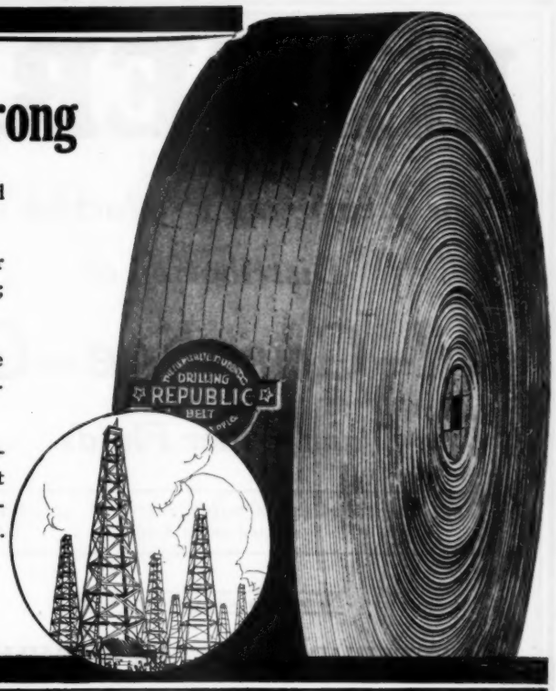

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TENSILE AND COLLAPSING STRENGTH OF SEAMLESS CASING SHOWN BY TESTS

By Harold A. Thomas
Carnegie Institute of Technology

Before Group Session, Improvement in Drilling, American Petroleum Institute, Fort Worth, Tex.

The rapidly increasing use of high-strength seamless casing for deep well work has resulted in a demand for accurate information regarding their properties. In order to obtain such information, a considerable amount of experimental work on the strength of steel casing has been carried on during the past year at the Carnegie Institute of Technology, in cooperation with the Standard Seamless Tube Co. of Pittsburgh, Pa. In this connection a careful study has been made on the experimental and theoretical evidence bearing on the relation of the strength of the steel in a casing to the pulling-out strength of the screwed up joints and to the collapsing strength of the casing.

Pulling-Out Strength

To obtain information on the tensile or "pulling out" strength of screwed up joints in casing of different grades of steel numerous full-sized specimens of casing were tested to failure in tension in the large testing machine at Carnegie Institute of Technology. Tensile tests on strips cut from the specimens listed in the table showed average ultimate strengths of 53,000 and 88,000 pounds per square inch, respectively, for the steels of the welded and seamless casing. The specimens were provided with the usual screwed-up joints having 10 threads per inch with a taper in diameter of three-eighths of an inch per foot.

A material gain in pulling out strength can be secured in casing made from high-carbon steel by the seamless process, the average gain in strength of seamless over-welding casing in this particular series being more than 75 per cent.

A close inspection brings out the existence of irregularities in the test data. For example: Two specimens which are apparently exactly alike in dimensions and materials do not in every case show equal strengths. The causes of some of these irregularities can be discovered in the physical tests of the metal and the measurements of wall thickness, but this explanation is not sufficient in all cases. As these irregularities can only be ironed out by averaging the results of many tests, it is evident that theoretical as well as experimental evidence is needed for computing and tabulating probable pulling-out strengths for casing of the various sizes, weight, metals, and threads used in practice.

The basis for a theoretical study in pulling-out strength was obtained from observation of the manner of failure of specimens of casing tested at Carnegie Institute of Technology. It was noted that all specimens of casing which were provided with the usual screwed-up joints failed by the pulling-out of the casing from the coupling. This action occurred without stripping the threads, and was found to be caused by a springing-in or reduction in diameter of the threaded end of the casing. In studying the causes of the type of failure the following facts were noted:

1. The reduction in diameter of the threaded end is due in part to the wedging action of the threads.

2. This wedging action is modified and resisted by friction between the thread surfaces.

3. The reduction in diameter is due in part to the lateral contraction of the steel as it elongates in the direction of the main tension. For example—a rubber tube decreases in diameter as it is stretched.

4. The resistance offered by the casing to this reduction in diameter is directly dependent on the amount of metal in the engaged threaded portion of the casing, this being a function of the diameter of the casing, the length of the engaged threaded portion, the original wall thickness, and the amount of metal removed in forming threads of the given depth and taper.

5. Pulling-out strength is directly dependent on the yield point or elastic limit of the metal. This follows from the fact that pulling out takes place soon after the metal begins to yield.

Discussion has arisen in the past as to whether the initial tightness of the coupling affects the pulling-out strength of the casing. Formulas 1 and 1-A do not involve the factor of initial tightness. This is in conformity with the test results, for the reduction in diameter of the threaded end, which occurs before failure can take place, must loosen the coupling in every case regardless of the initial tightness.

Discussion has also arisen as to the advisability of permitting a certain number of black threads to be passed in the inspection of casing. If casing is slightly undersize in outside diameter, the edge of the last few threads may remain black, while if the casing is oversize in diameter, this will not occur, but an excessive amount of metal will be removed from the casing by the dies. From the standpoint of pulling-out strength the former condition is much preferable to the latter, since pulling-out strength is greatly lowered by the removal of the metal from the threaded end of the casing.

An interesting aspect of the subject of the pulling-out strength of joints occurs in connection with the margin of reserve of pulling out strength which can be used for freeing a casing when stuck or "frozen" in a deep well. Consider that 6¼-inch 28-pound welded casing is being used in a well 4,000 feet deep. Assuming that the joints are of the usual type and that the yield point of the metal is 35,000 pounds per square inch, the safe pulling-out strength of the top joint is 149,000 pounds. The weight of the casing itself is 112,000 pounds, leaving a margin of 149,000-112,000, or 37,000 pounds, which can be safely exerted at the top joint for freeing the casing if frozen. Suppose that for the welded casing we substitute a seamless casing, made of steel, having a yield point of 50,000 pounds per square inch, the safe pulling-out strength of the latter casing will be 186,000 pounds per square inch, and its reserve strength for freeing if frozen will be 186,000-112,000, or 74,000 pounds. It is seen that under the conditions assumed in this example an increase of 43 per cent in the yield-point strength of the steel has resulted in an increase of 100 per cent in the margin of reserve strength for freeing the casing when frozen. In other words, the stronger material is less handicapped by its own dead weight.

The pulling-out strength of casing varies with the strength of the steel used. A given percentage increase in the yield point strength of the steel produces the same percentage increase in the pulling-out strength of the joints.

Collapsing Strength

In the minds of those contemplating the use of high carbon steel casing for deep well work, the question naturally arises as to whether the gain in the strength of the steel will be accompanied by an equivalent gain in the collapsing strength of the casing.

In explaining the underlying principles connected with the collapsing resistance of casing, it is convenient to first describe the simpler but analogous case of the buckling of a flat plate under a compressive load applied to two opposite edges.

Consider a flat plate of steel, 6 inches wide by 1-32nd of an inch thick, and having a slight initial curvature. Suppose this to be compressed edgewise by a gradually increasing load. As the load comes on the curvature will increase slowly at first, but when the load reaches a certain value the increase will become rapid, so that additional load cannot be supported. If the load be now released, the plate will spring back to its original

(Continued on Page 212)

The Cross Cracking Process

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(Continued on Page 212)

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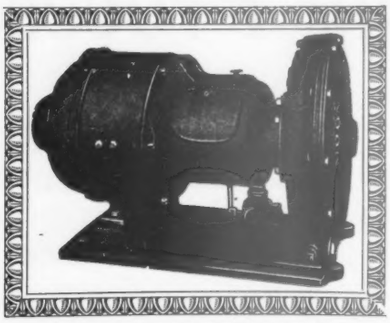

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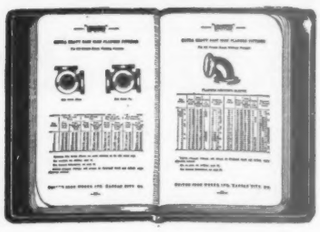

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KANSAS CITY, MO.

TULSA DALLAS

"UNITED" IRON WORKS INC. FOR SERVICE

BURNER MANUFACTURER'S PROBLEMS DESCRIBED TO PETROLEUM INSTITUTE

By Edward P. Bailey

President American Association of Oil Burner Manufacturers Before American Petroleum Institute, Fort Worth, Tex.,

All of us who manufacture oil burners will doubtless agree this problem may be divided into two major parts. First, the part that arises within our own factories concerned with manufacturing an oil burner that will serve its purpose satisfactorily and efficiently. Second, the distribution of this oil burner to the householder. We will have sufficient to engage all the time we can give to the subject, if we confine our discussion to the second part.

In the first place, as to the selection of a suitable local distributor, outside of the comparatively few oil burning machines the manufacturer may sell in his home territory, his distribution must be made through distributors or agents. Every manufacturer has found this selection of a suitable local distributor to be a continuing problem in every locality. First, he must be reasonably well-to-do financially; must be able to fit out a suitable place of business and to supply himself with a sufficient number of oil burning machines to enable him to carry on his business expeditiously, without waiting for the factory to supply him after a sale has been made. And he must be able, usually, through some finance company, to take care of his customers who desire to pay for their burners on the installment plan. There are always, however, a good many business adventurers, the "soldier of fortune" type, generally with some show of assets, waiting to get in on the ground floor of a new industry, but who fall by the wayside with the first show of difficulty. Every oil burner manufacturer can tell of the disorganization of his business, that has followed in one locality or another, because of the faintheartedness of a supposedly good agent.

The agent must be one whose previous training has qualified him to understand the general principles of combustion engineering. He must also be familiar with mechanical apparatus of many kinds, pumps, motors, blowers, fuses, thermostats.

He must also be a first class sales manager, for the nature of the business requires that he employ salesmen on commission. Perhaps no one thing has directly caused more trouble to the distributing agent of the oil burner manufacturer than the overenthusiastic statements of the oil burner salesman to his prospective customer. There is no magic about an oil burner that will convert a defective heating plant into a good one, but the oil burner salesman thinks there is, and he makes many rash promises to his prospective customer. And, unless the agent checks him up pretty well, trouble brews quickly. There are also some grades of oil that will not burn satisfactorily in small oil burners, but the oil burner salesman will not admit it, and many an oil distributor can tell you of the trouble he has had in pumping a supply of perfectly good oil for other purposes, out of a householder's tank after the oil burner salesman has told him that "cheap oil" is the thing for him to use.

The oil burner manufacturer has also a very real problem in the other oil burner manufacturer. There are some really good oil burning machines on the market, but many of the opposite stripe. And somehow, the man with a so-called oil burner of no practical value frequently makes sufficient headway in selling his equipment to place the whole oil burning industry in bad repute in the community and almost preclude the subsequent sale of satisfactory burners.

Besides which it seems to be the custom for some oil burner manufacturers to thoroughly inform their distributors and salesmen of the weak points of other really good oil burners, thereby giving out the impression that all are alike possessed of so many weak points it would be well for the prospective customer to wait until the industry in general arrives at a more advanced stage of development. This last trouble may perhaps be ameliorated when local associations of oil burner deals begin to function more satisfactorily.

Not least among the problems of the oil burner manufacturer is the method of securing his customers. If his show room is on a much frequented thoroughfare, he will have many callers out of idle curiosity. It is well, perhaps, that the show rooms should not be too conveniently located and yet should not be so far removed from the frequented thoroughfares that a person who has become interested would have to inconvenience himself to make his investigation.

After demonstrating the oil burning machine to a real prospect, the distributor generally finds his prospective customer has previously known something of oil burning. That knowledge may or may not be favorable. He has probably known where some widely advertised oil burner has been installed and because of improper combustion has caused the owner expensive trouble. The "news" has been industrially spread that an oil burner is likely to explode at any minute and blow the house up; that at any moment the house is likely to be sooted up and all the draperies and furniture ruined. All these stories must be counteracted.

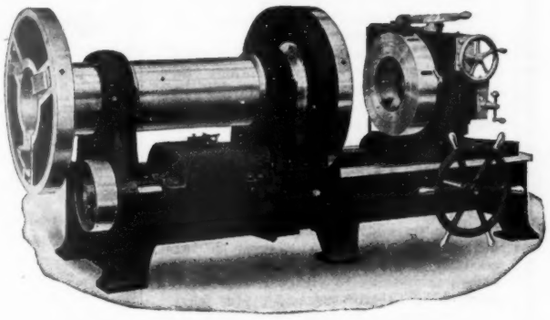
Need for Attention

After the customer has been secured and the oil burning equipment installed, the customer seems to think that all he will have to do is to have the service man of the oil burner distributor light his pilot light in the early fall and the equipment will entirely take care of itself for the heating season. The well informed oil burner manufacturer and his distributor both know it will be necessary for that burner to have continuous attention while it is in operation and the customer must be informed regarding this attention. All machinery with moving parts must be oiled and the oil burner is no exception. All furnaces need to be cleaned occasionally and the furnace that is burning oil will be no exception. These things are hard to impress upon the man who is buying the oil burner. He feels his oil

Halliburton is also the inventor of the measuring line to keep the top of the cement column located while pumping in. This would seem to have its greatest value when cementing is done through casing where standard tools and wire rope were used, and which may have worn through the casing. In such cases the plug will stop after passing the hole, but circulation will continue through the hole or slot, thereby giving a sufficient warning to permit the pulling of the casing before it becomes fast.

H. E. Becker and W. J. Robertson of the Union Oil Co. of California, have added a means of determining when cement has been displaced by the follow-up fluid. This is accomplished by the use of a disk, with a tapered seat that no cement can gather on top of the same. The disk can be placed in any collar in the string of casing, usually one of two joints off bottom. After the cement has been pumped into the casing a floating plug contained in a head at the top of the casing is then released, which is pumped down until it strikes the disc, and thus raising the pressure so the crew knows when to stop pumping. The plug has a cone-shaped face of rubber that fits into the taper on the disc so a perfect seat is assured.

At present it is an easy matter to place a large quantity of cement, say 500 sacks back of 4,500 feet of casing in 45 minutes and it is generally regarded that the one important factor is a proper mixture and getting it landed in a short space of time. So by using a good grade of cement with a mixture of 40 per cent or 40 per cent water to a sack of cement with facilities for handling it quickly and if casing is landed in the proper formation one can



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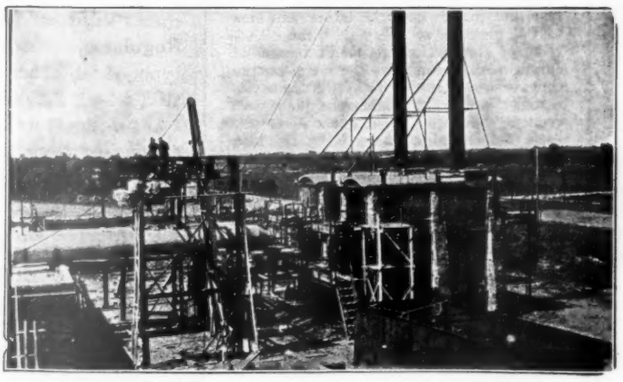

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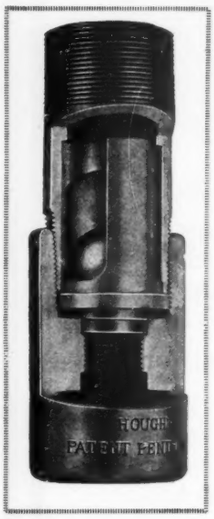

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Steady Continuous Service

—hour after hour, day after day,—requiring little or no attention, giving a steady consistent flow of the heaviest crudes, asphalt, tar and all vicous and bituminous products. When you find this condition, it is more than an even chance that it is a KINNEY PUMP.

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Philadelphia **New York** **San Francisco**
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expect nearly 100 per cent results. Perhaps the most failures in California to make jobs is due to not landing in suitable formation, as in many places there are alternating streaks of water sands, conglomerates and shales down to within a very few feet of the oil zone. Coring is aiding materially in determining the proper point of shutoff.

A large number of wells in California are successfully recemented where the original job failed. This is probably due to the channeling of cement through rotary mud left on the wall, and if the source of water is not too close to the shoe success may be expected by cementing through the channels where the water enters the hole. Even though the water may channel around the casing several times there is always the last channel to be dealt with and it usually can be successfully plugged with cement by using sufficient pressure to overcome the hydrostatic head back of the casing plus whatever friction that might be caused by cementing operations, and where we have made successful shutoffs after recementing six or eight times it will be readily seen that we are justified some times.

One might be justly fearful that wells will soon be so deep that the cement will set before it gets to the bottom. But if we can now pump 500 sacks 4,500 feet in 45 minutes the same amount could be pumped 9,000 feet in one and one-half hours. So it would seem that the cementers have a small margin left to work on, and if the geologists will find the oil and the manufacturers will make some equipment that we can do some real deep drilling with I am sure you will find the cementing and shutting off of water operations keeping pace with the balance of development.

STRENGTH OF SEAMLESS CASING SHOWN BY TESTS

(Continued from Page 208)

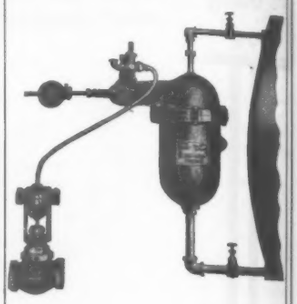
position, showing that the metal has not been strained beyond its yield point. It is thus evident the load which caused the thin plate to buckle was dependent only on the elasticity of the metal.

Now consider a flat metal plate, 6 inches wide by ½-inch thick, with a slight initial curvature, and let this be compressed edgewise as before under a gradually increasing load. The first effect of the load will be to increase the curvature, but in this case the lateral stiffness of the plate is so great that the occurrence of a comparatively small amount of curvature will compress the metal on the concave side until its yield point is reached. Soon after this the plate will suddenly buckle sidewise, and will not return to its original shape when the load is removed. It is therefore seen that the load which causes the thick plate to buckle depends primarily on the yield-point of the metal. If we should take four flat steel plates, each 6 inches wide, bend each of then into a quadrant of a cylinder, and weld the edges together, we would obtain a tube a little less than 8 inches in diameter. If the metal were 1-32 of an inch thick, the collapsing strength of the tube would depend primarily on the yield point of the steel. The latter wall thickness corresponds approximately with that of 8-inch casing suitable for deep well work.

The existence of these two different laws for the collapsing strength of thin-walled and thick-walled casings has been the source of many disputes and differences of opinion. The yield- point pressure is that pressure which first stresses the metal in some part of the casing to its yield point. The actual collapsing pressure is only slightly above this.

Great reduction of collapsing strength is produced by a relatively small amount of out-of-roundness in a casing. It is claimed one of the advantages of the seamless process is the possibility of producing casing of superior roundness to that obtained by the older methods.

Among experiments on the collapse of pipes, those made by Prof. C. B. Stewart of the University of Pittsburgh, in cooperation with the National Tube Co., are the most extensive. Although these experiments covered only casing made by weld-



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In manufacturing gasoline by absorbing it in oil and then separating it from the oil by distillation, a constant oil level must be maintained in both the absorbing tank and still.

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It is an Automatic Regulator of the Oil Supply in Absorber Tanks

Regulator mounted on side of tank, so that center of chamber is opposite to oil level desired.

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If a small advertisement can bring TOO MUCH BUSINESS in lax times it stands to reason that very satisfying and exceptionally good results can be obtained now!

Other men and organizations are using the Classified Section to advantage. You, too, can be successful. Turn to the Classified Wants Section and see how the other fellow is making good use of it.

Then mail your advertisement so that it will be in next Thursday's issue. The cost is so small that one favorable reply will pay for it a hundred times over.

The Oil and Gas Journal
Classified Wants Section
"Biggest in America"

ing process, they form a valuable source of information for verifying the collapsing pressure theory. The best available tests on seamless casing are those made by the British Mannesman Co.

The question proposed at the beginning of the discussion on collapsing pressure may be answered as follows:

When the yield point strength of the steel used in a casing is increased by a given percentage, the collapsing strength will increase by a percentage slightly less. The latter percentage varies with the proportional wall-thickness being greater for thick-walled than for thin-walled casings. For example: Consider a 6¼-inch 28-pound welded casing made from steel having a yield point of 35,000 pounds per square inch. The collapsing pressure for this casing is 4,060 pounds per square inch. A seamless casing of this size and weight made from steel with 50,000 pounds per square inch yield point, would have a collapsing strength of 5,500 pounds per square inch. In this case a 43 per cent increase in the strength of the steel has produced a 37 per cent increase in the collapsing strength of the casing.

1. The seamless process permits the manufacture of casing from much stronger steel than can be used with the welding process.

The pulling-out strength of joints of the usual type varies directly with the yield-point strength of the steel of the casing.

The collapsing strength of casing of wall-thickness suitable for deep-well work increases at a rate only slightly less than that of the yield point strength of the steel.

KENTUCKY PRODUCERS SELECT NEW OFFICERS

BOWLING GREEN, Ky., Dec. 13.—At the annual meeting of the Oil Producers League held here, W. P. Simmons of E. M. Treat & Co. was unanimously reelected as president of the organization for the ensuing year. Vern T. Whitney of The Oil and Gas Journal, was elected secretary and E. V. Fowler as treasurer. Dr. E. R. Driggs, J. M. Welles and S. H. Bradshaw were elected active vice presidents and J. M. Welles, assistant secretary and treasurer. Directors for the coming year were selected by the members present as follows: W. P. Simmons, E. V. Fowler, J. M. Welles, E. R. Riggs, F. A. Brenbel, J. C. Sibley, Jr., C. A. Phelps, G. R. Stewart, D. T. Bolling, S. H. Bradshaw and J. H. McClurkin.

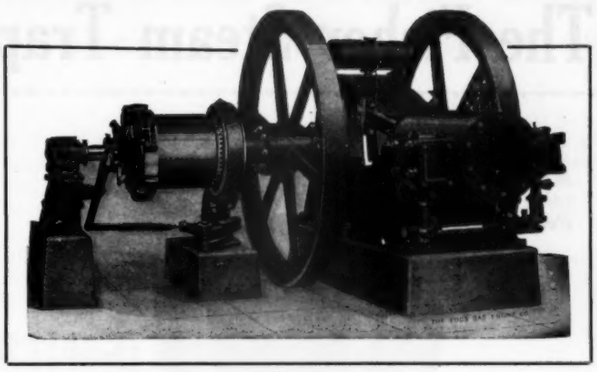
The spirit of the meeting showed harmony of purpose and the firm intention to cooperate in every movement looking toward the success of the oil industry in Kentucky. The officers were highly complimented on their work during the past year, especially with regard to legislation affecting the very life of the industry in which their efforts met with considerable success.

SOUTHWEST TEXAS OPERATIONS

In Jim Hogg County, Henne, Winch & Fariss, No. 4 Martinez is swabbing 125 bbls. at 1,995 feet. No. 3, the big well, is choked down to an average of 800 bbls. per day. It is reported the Texpata Pipe Line Co. will lay an 8-inch line from the Laredo-Jim Hogg districts to Port Aransas on the Gulf, taking over he terminal facilities of the Swiftsure Petroleum Co. Buchanan & Bailey's No. 1, Block 7, Survey 256, set casing to test, as did the Witherspoon Oil Co.'s No. 1, Block 13. The Magnolia Petroleum Co. junked No. 1 Thompson with the drill pipe in the hole and skidded the derrick. The Weber Oil Co.'s No. 4, located 3½ miles east and north of the Henne, Winch and Farriss wells, is preparing to test a showing in a sand at 2,780 feet.

The Grubstake Investment Co.'s No. I Fisher, in the Calliham Field, is a 25-bbl. well at 712 feet and the Progressive Oil Co.'s No. 1 Cox is rated at 100 bbls. initial output at 754 feet.

In the Wolcott Pool, the Magnolia Petroleum Co. completed No. 14, making 125 bbls. and the Nueva Oil Co.'s No. 4 is making 125 bbls.



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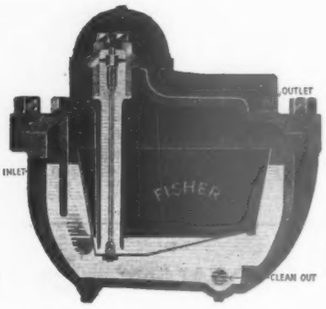

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PRODUCTION OF WORLD OIL AND THE MARKETS

(Continued from Page 72)

fields produced one-half of one per cent of the world's output for that year.

In 1923 France, Germany, Czecho-Slovakia, Italy and England, combined, produced, within the confines of their own territory, slightly over 800,000 bbls. of oil—and of the nations of Europe today, certainly England, France, and Germany would feel greater industrial security were they amply endowed with oil resources. Much of the economics of peace, as well as the strategy of war, goes with petroleum power resources.

Europe is a present market for over 100,000,000 bbls. of petroleum products, for which she produces about one-half the crude oil within her own borders.

In area, Europe is over 25 per cent larger than the United States. Its population is more than four times as great as the United States. In 1923 it produced one-thirteenth as much crude oil as we produced and consumed slightly less than one-sixth as much of petroleum products.

And yet Europe's real problem is not so much the possession within its own borders of great reserves of oil—it is "buying power" which is only the result of "producing power," in action—and with a financially reconstructed Europe, the markets will expand proportionately.

Production in Asia

To the end of 1923 the continent of Asia had produced a total of over 600 000,000 bbls. of oil, or 5.2 per cent of the world output. Of the world production in 1923, Asia supplied 62,000,000 bbls., or 6.2 per cent. It consumed, last year, over 27,000,000 bbls. of petroleum products or slightly less than half as much as she produced of crude oil.

Production in the Dutch East Indies has ranged from 10,000,000 bbls. in 1908 to 15,500,000 bbls. last year, with the peak of 17,500,000 bbls. in 1920. In the last 30 years this oil producing area, whose islands form a part of the East India Archipelago, has produced almost one-half of the oil produced in Asia.

These fields are the foundation upon which the Royal Dutch Co. has built its world-wide oil organization—the only organization that, from a world standpoint can be considered a competitor of Standard Oil. The Dutch East Indies had a surplus last year of some 10,000,000 bbls. which obviously was at the disposal of the Royal Dutch-Shell Co., whose head office is in London.

The fields of Burma are essentially British, and have produced a total of over 149,000,000 bbls. of oil. The production in any one year has never reached 9,000,000 bbls. or an average of 25,000 bbls. a day. The market for oil products in India, with a population of over 300,000,000 is about the same as the French market, or the Mexican market—11,000,000 bbls. a year.

It is interesting to note that Asia's outstanding oil field today lies about 100 miles north of the head of the Persian Gulf, while Europe's is only a few hundred miles directly north of it at Baku on the Caspian Sea. The Persian fields, as at present developed, are operated by the Anglo-Persian Oil Co. which late rumors claim is to be merged with the Royal Dutch-Shell group of interests.

While Persia has produced only 118,-000,000 bbls. of oil, or 1 per cent of the world's output, these fields, in 1923, produced 28,793,000 bbls., an amount equal to the indicated consumption of all of Asia.

Japan's Output

Japan, including the Island of Formosa, has produced a total of almost 48,000,000 bbls. of oil—less than one-half of 1 per cent of the world's supply. Of the total production in 1923 Japan produced less than one-fifth of 1 per cent—and consumed twice as much as she produced. Present production averages about 5,000 bbls. per day.

Sarawak, which is a British colony on the northwestern coast of the island of Borneo, has produced a total of over 12,000,000 bbls. The production last

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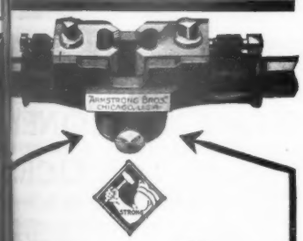

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year was 3,940,000 bbls. or an average of about 10,000 bbls. a day.

Taking the continent of Asia as a whole it is producing today twice as many barrels of crude oil as it is consuming of finished products with the possibility that the production from one area, Persia, can be developed more rapidly than the probable industrial expansion of Asia in the next few years.

Africa's Possibilities

Africa has produced a total of one-tenth of 1 per cent of the oil of the world — and practically all of it has come from Egypt. The fields lie between the head of the Red Sea and the River Niie. Present production averages less than 3,000 bbls. a day, the peak year being 1918 when the production totaled close to 2,000,000 bbls.

Africa's present market for petroleum products is estimated at slightly over 3,000,000 bbls., of which the Union of South Africa uses less than 1,000,000 bbls. and Egypt slightly over 2,000,000 bbls.

Australia Yet Unknown

While a great deal of prospecting has been done in Australia and New Zealand oil has not been found in sufficient quantities to entitle either country to be listed as oil-producing. The present market for both countries totals under 2,000,000 bbls. a year.

One hardly realizes how far fuel oil has gone in replacing coal in the world's merchant marine and navies until it is learned that the bunkering stations located at strategic ports throughout the world delivered more than 120,000,000 bbls. of fuel oil in 1923.

The one item amounts to 12 per cent of the world market for petroleum products.

Consumption Climbing

Surveying briefly the world oil situation as it exists today, we find that in 1923 the world produced 1,018,900,000 bbls. of crude oil and consumed 922,000,000 bbls. of petroleum products. This would indicate that last year we consumed within about 97,000,000 bbls. of as much petroleum products as we produced of crude oil. In other words the world's markets consumed within 9 per cent of all the oil we produced in 1923.

It is hardly probable that the world's production of crude oil in 1924 will be greater than in 1923—but there is every indication that the world's consumption of petroleum products in 1924 will be substantially greater than in 1923.

Regardless of the overproduction in the United States last year, and regardless of the large stocks of crude oil and refined products in the United States today, the fact remains that, taking the world as a whole, the present market of around a billion barrels a year is so huge, and the assurance of having an adequate supply of this industrially indispensable power resource is so vitally necessary, it would seem that even though the burden in the United States is heavy today, the world as a whole is traveling on a "thin margin" when it consumes within 9 per cent of as much oil as it produces.

TABLE 2
Production of Mexican Fields

Area and Fields—	Total Prod. to End of 1923	Prod. in 1923
North—(heavy oil):		
Panuco	269,918,815	81,790,839
Ebano (discov. field, 1904)	28,373,472	2,630,585
Topila	14,094,390	3,644,250
Minor fields	175,000	5,799
Total	**312,561,677**	**88,071,473**
South—(light oil):		
Tepetate - Chinampa-Amatlan - Zacamixtle	375,550,433	14,636,553
Toteco-Cerro Azul	212,255,998	24,478,560
Potrero del Llano-Alazan	111,025,469	2,574,132
Tierra Blanca-Chapapote-Alamo	67,159,140	17,087,370
Cerro Viejo	5,656,884	1,690,985
Chinconcillo-San Miguel	2,865,907	408,988
San Geronimo (heavy oil)	2177,017	468,907
Molino (heavy oil)	279,355	623
Tanguijo-Tierra Amarillo	621,255	59,346
Miscellaneous		8,517
Total	**781,102,322**	**61,413,981**
Interior—(light oil):		
Furbero	3,510,894	62,919
Grand total	**1,093,663,999**	**149,548,373**

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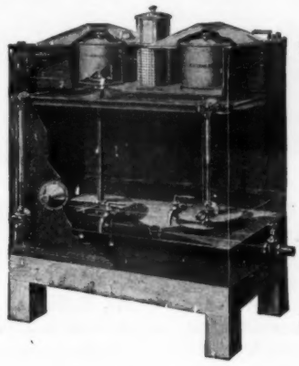
BURT Filter



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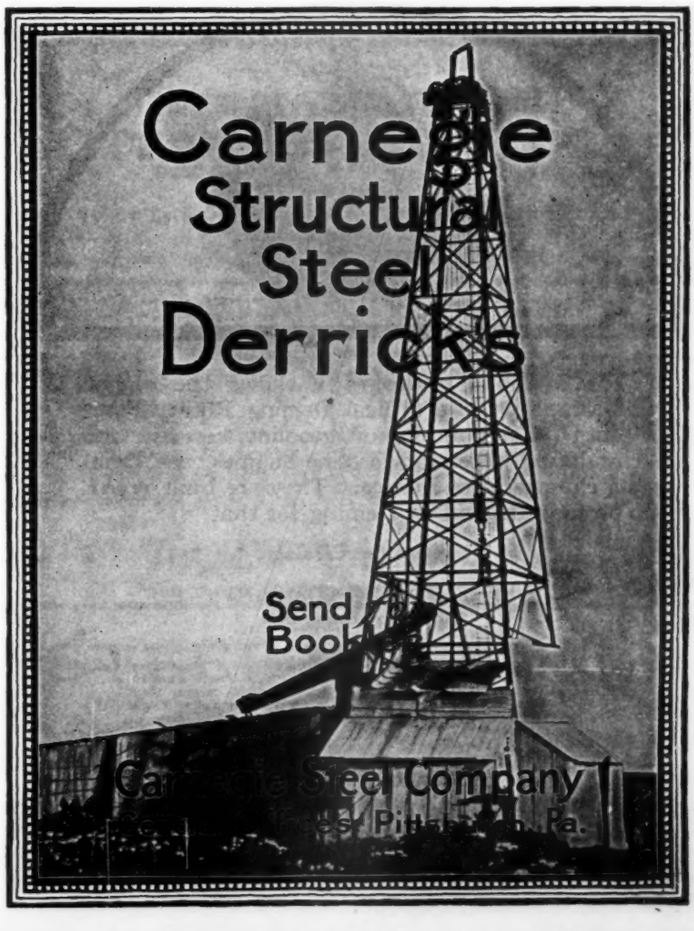

BACK in the years when wells were drilled more to obtain fuel for illumination than for automobiles, you men who now are called "old timers" put through your work with tools probably made from Colonial.

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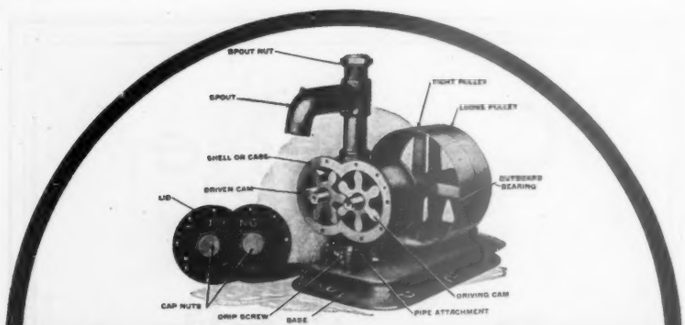

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Deming PUMPS

NEBRASKA WELL'S LOG INTERESTS GEOLOGISTS

Three interesting papers were given at the December meeting of the Tulsa Geological Society held in Tulsa recently. One by H. B. Goodrich was on the difficulties encountered in securing well logs, and the importance to both the owner of the well and to the public of securing and filing logs made as accurately as possible.

Sydney Powers, of the Amerada Petroleum Corp. discussed his company's core drilled well in Section 26-11-12, in Nebraska. The hole was sunk on what appeared to be, from the outcrops in that section, a monoclinal nose. The surface was below the middle part of the Pennsylvanian, and there was every reason to suppose that the oil possibilities were at least favorable. The well was dry.

The first 500 feet was largely shales and hard limestones, when the end of the Pennsylvanian was reached. The Cherokee formation, which produces most of the gas and oil in Oklahoma and Kansas was entirely missing and the Mississippian log also was lacking. The log then shows 1,100 feet of highly metamorphosed rock, mostly chert and dolomitic limestones with little shale. Toward the base, a 50-foot limestone was encountered, underlain by a sandstone 20 feet thick which is believed to be the St. Peter sandstone. After two more thin limestones had been drilled through, separated by a shale 10 feet thick, quartzite was encountered and drilled to the total depth of the well, 2,500 feet.

The fact that this well was bordered on both sides by deep wells in which igneous rocks were not encountered leads Mr. Powers to believe that the quartzite into which his well drilled is part of a northern extension of the buried igneous ridge known as the Nemaha Mountains. The Amerada well was drilled at a point 55 miles north of the Kansas line, the most northerly place where the granite was previously known to exist.

F. B. Sherwood, of the Waite Phillips Co., showed a chart upon which he has correlated all of the principal productive sands down to the Wilcox across a strip of country beginning near Okmulgee, and running southwest to Cromwell and Wewoka and across Seminole County to Ada, in Pontotoc County. All of the lower sands drop out in the middle of the southern half of Seminole County, and reappear near the southern boundary of the State. The correlation also revealed the extent of fault along the east side of the Cromwell Field, and the period at which the faulting took place.

VENEZUELAN CRUDE EXPORTS

WASHINGTON, D. C., Dec. 15.—The average exports of crude petroleum from Maracaibo, Venezuela, during the months from August to October was in excess of the previous record of 90,590 metric tons, Vice Consul Payne reports. Total exports of petroleum during the first nine months of 1924 amounted to 711,653 metric tons, of which the Caribbean Petroleum Co. shipped 376,000 tons, the Venezuelan Oil Concession, Ltd., 236,000 tons and the British controlled oil fields 98,000 tons.

RUMANIAN OIL CONCESSION

Rumania has promised Steaua Romana and Phoenix Oil Co. large shares in new oil concessions to be granted about the middle of December, says a report from London, which adds, it is reported, the Royal Dutch-Shell and Standard Oil will not obtain a share because of opposition to nationalization of their Rumanian operations.

BRITISH REVIVE TURK CLAIM

LONDON, Dec. 15.—The British Government still supports the claims of the Turkish Petroleum Co. The contract given by Turkey, in the opinion of the British Government, should pass as an obligation to the Government of Iraq which annexed most of the region concerned. At the San Remo conference an agree-

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ment was reached between the powers to give an American group, with Standard Oil predominating, 25 per cent, Royal Dutch-Shell 25 per cent, Anglo-Persian Oil 25 per cent and the French 25 per cent. The original concession granted by the Turkish Government was to exploit oil resources in Mosul and Bagdad districts. Half then was to go to the Anglo-Persian group, a quarter to Royal Dutch, and the other quarter to the Deutsche Bank. The Iraq Government is now considering offers from Phoenix Oil and the Eastern & General Trust Co.

Detailed Operations In New York and N.W. Pennsylvania Fields

WELLS COMPLETED

ALLEGANY

Heseltine Est., First Trust, Wys.	1
McAndrews, E. J., Atwood et al	1
Fanton, E. M., Ketchner	1
Fee, Empire Gas & Fuel, Ltd.	2
Fee, Empire Gas & Fuel, Ltd.	2
Kinley Oil, Turner Bros. et al	1
Fee, W. B. Turner et al	1
Devoe & Higbee, Love et al	1
Kinley Oil, W. J. Weller et al	wtr.
Kinley Oil, W. J. Weller et al	1
Fee, Empire Gas & Fuel, Ltd., et al	2
Fee, J. P. Herrick	1
Fee, Empire, Ltd., & Breckenridge	1
Fee, E. L. & Sadie Sawyer	2
Fee, J. E. LeSuer et al	2
Fee, J. E. LeSuer et al	3
Fee, R. J. Dermitt	3
Fee, Burtell & Burtell	2
Fee, J. Willets Est.	2
Fee, Homestead Oil	2
Fee, Turner Oil	2
Coast & South Penn Oil, M. J. Crowley et al	5
Childs, N. K. Wilson	1
Fee, Sawyer & Wasson	5
Fee, Lavens Est.	3
Fee, Dusenbury et al 1	1
Fee, Sawnett Oil Corp.	2
Wells completed	27
Production	50
Water	1

BRADFORD FIELD

Bing. 388, C. L. Wann et al 43	2
Bing. 431, J. A. Hooper 1	2
Bing. 391, Geo. W. Bovaird 72	4
Bing., 369, D. W. Daly 56	3
Bing. 370, C. L. Wann et al 34	2
Bing. 368, Forest Oil, Inc., No. 9, 41	4
Moody, Grant & Mohan 57	2
Bing. 173, Kishwaukee Oil 46	15
Dana & Diem, Kishwaukee Oil 47	1
Riddell Est., South Penn. Oil 40	2
Weston, Jr., Tr., South Penn Oil 75	2
Weston, Jr., Tr., South Penn Oil 76	2
Fee, South Penn Oil 71	1
Fee, J. V. Golden 19	2
Fee, Woodward et al 15	4
Clingston et al, Parker Farm Oil 10	2
Fee, Hungiville et al 6	8
Fee, J. C. Looker et al 21	1
Fee, Hungiville et al 4	2
Franchot, Mgr., Trs., W. C. Kennedy Co., No. 7, 1	2
Franchot, Mgr., Trs., Wile Bros 1	2
Armstrong et al, South Penn Oil & Kennedy 1	1
Fee, L. G. Dana	4
Leasure, South Penn Oil	4
Fee, Mrs. J. T. Jones	1
Fee, Sabra T. George	1
Fee, South Penn Oil	1
Quintuple Oil, H. Newell	1
Fee, South Penn Oil 33	1
Bing. 184, Associated Prod. 329	2
Bing. 150, South Penn Oil 54	5
Fee, W. C. Kennedy Co. 39	8
Fee, Kaber & Kaber 38	1
Fee, South Penn Oil 50	5
Fee, South Penn Oil 88	5
Quintuple Oil, Moore & Bradley	5
Bing. Associated Prod. 281	4
Bing., Associated Prod. 296	5
Bing., Associated Prod. 305	5
Bing., Associated Prod. 308	4
Bing., Associated Prod. 323	4
Fee, Hazelwood & Kennedy No. 3, 65	1
Bing. 427, Scofield & White	2
Bing. 499, South Penn Oil 37	2
Bing. 439, South Penn Oil 72	1
Bing. 368, Associated Prod. 327	1
Bing. 582, Associated Prod. 271	1
Bing. 576, South Penn Oil 96	5
Bing. 576, South Penn Oil 101	1
Fee, J. E. LeSuer et al	2
Fee, Hazelwood Oil	4
Fee, Birtcil & Birtcil	1
Fee, Hazelwood Oil	1
Fee, Forest Oil	5
Fee, Maude Hardman	1
Franks, Forest Oil	2
Baldwin, Forest Oil	3
Noble, Forest Oil	8
Burns, Burns Brothers	2
Keating, Potter & Nichols	5
Burns, Arthur Yahn	4
Whitney, Simpson & Cooper	2
Shepard, South Penn Oil	1
Chambers, J. A. Bucher	1
Borden, J. C. Mitchell	1
Morse, J. Minnich	2
Borden, T. B. Wilson	1
Doubleday, Pressure Oil	1
Borden, T. P. Thomson & Son	3
Borden, Raff & Schwab	3
Hanes, Coast & Storms	2
Duke, Gridiron Oil	2
Middaugh, L. J. Lilly Est.	gas
Vincent, S. H. Elder & Co.	4
Wilbur, South Penn Oil	4
Emerson, C. L. Rhodes	1
Emerson, South Penn Oil	5
Bingham, South Penn Oil	2
Wright, J. W. Bouton et al	1
Lawton, Oil City Trust	1
Bingham, H. R. McCalmont et al	9

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Lot 2593, Hoskins & Roeder..... 4
Sill, Hope Oil..... 1
Emerson, W. J. Healy..... 2
Bingham, Barry Bros. 2
Jack, J. H. & H. M. Jack..... 1
Fee, Evans & Wood..... 5
Hodge, South Penn Oil..... dry
Nolan, C. Nolan..... 2
Melvin, South Penn Oil..... 1
Melvin, South Penn Oil..... 1
Melvin, South Penn Oil..... dry

Wells completed 92
Production 218
Dry 2
Gas 1

MIDDLE FIELD
Lot 3664, South Penn Oil 37..... 1

VENANGO-CLARION
Smithman, J. B. Smithman 82..... 1
Stiles Tract 74, S. Y. Ramage 73..... 1
Donaldson, Donaldson, McDowell et al 2 1
Kulp, McLaughlin 6..... 1
Stevenson, Midland Oil Corp. 36..... 3
McCalmont, S. P. McCalmont Est. 41.. dry
Kern, C. B. Kern 8..... 2
Nelson, S. C. Sampson 7..... 2
Miles, Miles, Leedom et al 4..... 1
Miles, Miles, Leedom et al 5..... dry
Tingley, Sidney Mong 3..... 1
Crawford, John Preston 6..... 1
Smithman, Fields & Citizens Bank of Pleasantville 12..... abd
Smithman, Fields & Citizens Bank of Pleasantville 12..... 1
Gallagher, McKim, Titus et al 3..... 1
Smith, Smith, Brutche & Turk 12..... 2
Eakin, C. B. Reeves 15..... 1
Hollister, S. Y. Ramage 44..... 1
Hollister, J. C. Atwell 13..... 1
Simcox, G. A. Eakin 13..... 1
Iron & Coal, R. G. Hancox et al 2..... dry
Crystal Springs, Jackson Oil & Gas 7.. 1
Finchbaugh, Coffman & Allison 5 1
Weaver, J. H. Weaver et al 1..... 1
Clarion—
Whiting, Alum Rock Gas 10..... gas
Hector, Master & Hess 8..... gas
McGuire, Mong, McGuire et al 2..... 1
Kapp & Graham, Alum Rock Gas 9.... gas
Corlett & Kaufman, Corlette & Kaufman 2..... gas
Corbett & Wilson, H. W. Wilson 4.... gas
Verner, Franklin Trust 5..... gas
Garis, Alum Rock Gas 6..... 1
Heeter, Heeter Oil & Gas 2..... dry
Porter, Lamberton & Phillips 1..... 4

Wells completed 32
Production 31
Dry 4
Gas 6
Abandoned 1

BUTLER-ARMSTRONG
Hartung Heirs, American Nat. Gas 1... dry
Helm Heirs, Elliott & Neff 2..... 5
Henry Heirs, American Nat. Gas 1.... gas
Kaylor, McCullough Gas 1..... gas
Keystone Mining, W. & E. J. Porter et al 1 ..... gas
McCormick, Steele & Miller 2..... 2
McKee, T. W. Phillips Gas & Oil 5..... dry
Fyle, E. H. Fyle et al 3..... 5
Croft, Garvin et al 1..... 1
Rader, A. Rea 4 3
Rape, Eli Rape et al 3..... dry
Staley, E. Campbell et al 1..... dry
Bauer, Burns, Bauer et al 6..... 2
Rider, W. J. Stoughton 2..... 1
Donnelly, Bear Creek Oil 25

Wells completeds 16
Production 45
Dry 4
Gas 3

ALLEG NY
Rigs
McAndrews, E. J. Atwood et al.
Fenton, E. M. Ketchner.
Fee, Empire Gas & Fuel, Ltd.
Devoe & Higbee, Love et al.
Fee, Clyde Jordan.
Kinley Oil, W. J. Weller et al.
Fee, J. P. Herrick.
Fee, Empire Gas & Fuel, Ltd. et al.
Murphy, Sherwood & Murphy.
Fee, Emma McEwen.
Fee, J. E. LaSure & Co.
Fee, R. J. Dermitt.
Fee, Henline et al.
Coast & South Penn, M. J. Crowley et al.
Fee, E. J. Phillips.
Fee, Sawnett Oil Corp.
Wells Drilling
Burrows National Bank No. 1, M. Peasley.
Drake, First National Bank, Olean et al.
Bledsoe, Windsor & Smith.
Potter, State Bank of Bolivar Nos. 28, 29.
Citizens National Bank of Wvs. No. 68, N. E. Goodell.
Fee, Empire Gas & Fuel, Ltd.
Kinley Oil, W. J. Weller et al.
Kinley Oil, W. J. Weller et al.
Putman, F. L. Putman et al.
Fee, E. C. Williams et al.
Fee, R. J. Dermitt.
Birtell, McMurrty et al.
Fee, L. C. Whitford et al.
Fee, T. J. Gilligan et al.
Fee, Cuba National Bank.
Fee, Wm. Bartoo et al.
Fee, Lavens Est. et al.
Rigs, 17; wells drilling, 17, total, 34.

BRADFORD FIELD
Rigs
Bing, 391, Geo. W. Bovaird 73.
Bing. 431, J. A. Hooper 2.
Bing. 370, C. L. Wann et al 35.
Bing. 490, T. H. Kennedy Co. No. 2, 127.
Bing. 368, Forest Oil, Inc. No. 9, 42.
Weston, Jr., Tr., South Penn Oil 77, 78.
Armstrong et al, S. P. O. & Kennedy 26.
Fee, Mrs. J. T. Jones.
Fee, W. C. Kennedy Co. 41.
Bing. 176, Hazelwood Oil & Kennedy 100.
Bing. 150, South Penn Oil 55.
Quintuple Oil, Moore & Bradley.
Bing. 190, South Penn Oil 77.
Fee, Hazelwood & Kennedy No. 3, 66.
Bing. 439, South Penn Oil 74.
Bing. 580, Associated Prod. 335.
Fee, E. G. Williams et al.
Coast & S. P. Oil, M. J. Crowley et al.
Fee, L. C. Whitford et al.
Baldwin, Forest Oil.
Wells Drilling
Diana & Diem, Kishwaukee Oil 48.
Bing. 170, Elder, Redfield et al 44.

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Bing. 490, T. H. Kennedy Co. No. 2, 126.
Bing. 370, R. M. and James George 15.
Bing. 408, J. E. Ward 13.
Bing. 388, C. L. Wann et al 44.
Bing. 389, D. W. Daly 36.
Mantz, L. F. Kinley et al 37.
Vincent Heirs, Howard McCallum 35.
Riddell Est., South Penn Oil 46.
Fee, South Penn Oil 72.
Fee, J. V. Golden 20.
Fee, Woodward et al 16.
Fee, D. T. Andrus et al 12.
Fee, F. L. & F. J. Shippey 2.
Franchot, Mgr., Tr., Wile Bros. 1.
Franchot, Mgr., Tr., W. C. Kennedy Co. No. 7, 1.
Erie R. R., South Penn Oil.
Drake Heirs, Hannon Oil.
Griffith et al, Hartzel & Knabb.
Fee, L. G. Dana.
Bing. 184, Associated Prod. 330, 331, 335.
Bing. South Penn Oil 15.
Fee, W. C. Kennedy Co. 40.
Bing. 176, Hazelwood & Kennedy 96.
Fee, Hilliard & Dodge.
Bing., Associated Production 30, 286, 306, 310.
Quintuple Oil, W. N. Hunter.
Bing. 136, Kennedy Co. No. 4, 52, 53.
Newton, Hurd Bros. & Newton 7.
Bing. 570, South Penn Oil 97.
Bing. 533, South Penn Oil 63.
Bing. 439, South Penn Oil 71.
Bing. 533, South Penn Oil 66.
Bing. 568, Associated Prod. 334.
Bing. 576, South Penn Oil 98.
Bing. 582, Associated Prod. 272.
Fee, Forest Oil
Fee, J. E. LaSuer et al.
Fee, Mrs. G. F. Richardson et al.
Fee, R. J. Dermitt
Baldwin, Forest Oil.
Porter, Forest Oil.
Noble, Forest Oil.
Burns, Burns Bros.
Irvine, C. E. Potter.
Burns, Arthur Yahn.
Loop, E. M. Daly.
D. C. & B., George & Kervin.
Baldwin, C. B. Kervin.
Whitney, Simpson & Cooper.
Shepard, South Penn Oil.
Jones, South Penn Oil.
Chambers, J. A. Bucher.
Borden, C. J. Mitchell.
Morse, J. Minnich.
Borden, T. B. Wilson.
Howard, Pressure Oil.
Doubleday, Pressure Oil.
Borden, Raff & Schwab.
Pittenger, South Penn Oil.
Vincent, S. H. Elder & Co.
Bingham, H. E. Camp Est.
Wilbur, South Penn Oil.
Wright, Wright & Johnson.
Bingham, South Penn Oil.
Bingham, J. L. Yerdon.
Lawton, Oil City Trust.
Bingham, H. P. McCalmont et al.
Bingham, Andrus & MacDowell.
Lot 3767, F. J. Moser 24.
Thilo B. Shear.
McDonald, J. L. Billstone.
Sill, Hope Oil.
Hodge, South Penn Oil.
Pratt, Korner Bros.
Fisher, M. E. Jones.
Murphy, Forest Oil.
Willett, J. H. Gibson.
Campbell, G. F. Devlin.
Fee, Webb Estate
Corwin, J. H. Gallagher.
Lafferty, Hazelwood Oil.
Nolan, C. Nolan
Lafferty, Whitehead & Co.
Lafferty, George & George.
Roggenbaum, Roggenbaum.
Melvin, South Penn Oil (three wells).
Rigs, 21; wells drilling, 96; total, 117.

MIDDLE FIELD
Rigs
Osgood, Rembold et al 6.
Jennings, C. E. Carnahan 32.
Wells Drilling
O'Hara, Pequignot & Co. 10.
McDonald, King & Coursen 1.
Rigs, 2; wells drilling, 2; total, 4.

VENANGO-CLARION
Wells Drilling
White, Corbett & White 13.
McCalmont, S. P. McCalmont Est. 42.
Cochran, W. J. Cochran 27.
Nelson, S. C. Sampson 8.
Mark, Stover, Graham et al 7.
Vandyke, Breadin & Co. 1.
Hovis, Hovis, Surrena et al 25.
Phila. & Boston, R. G. Hancox et al 1.
Henderson, S. Y. Ramage 49.
Eakin, C. B. Reeves 16.
Miller, Luken 2.
Clarion—
Heeter, Master & Hess 9.
Miller, Miller & Mong 9.
McLaughlin, J. M. McLaughlin 12.
Kapp, Alum Rock Gas 2.
Koehler, Ross, Koehler et al 5.
Gardner, Alum Rock Gas 1.
Collear, E. A. Bream Co. 1.
Wells drilling, 18.

BUTLER-ARMSTRONG
Rigs
Evans City Cemetery, Wm. Pfiefer & Co. 4.
Kamerer, Mr. and Mrs. E. R. Kamerer 1.
Taylor, Birckbichler Bros. 3.
Bogg Heirs, R. C. & W. V. Binkerd.
Moore, Snow et al.
Johns, I. N. Johns.
Campbell, H. H. Campbell 4.
Ray, Young, Graham et al 3.
Wells Drilling
Shephard, American Natural Gas 1.
Brady Tract, L. D. Berry 29.
Delaney, Delaney Bros. 1.
Shaner & Bielstein, Shaner & Co. 2.
Geibel, Geibel Bros. 1.
Huselton, J. M. Hicks 21.
Pyle, E. H. Pyle et al 4.
Pyle, Bauder, Dambaugh et al 6.
Albert, Pittsburgh Co. 1.
Duncan, J. L. Peters & Son 2.
Griffith, E. C. Griffith.
Furnace, Charles Vogt.
Campbell, Campbell & Sherwin 2.
Campbell, Baird, McCandless et al 11.
Campbell, Smith, Burkett et al 1.
McKinney, G. F. Hovis et al 2.
Toggett, D. L. Baird et al 2.
Rigs, 8; wells drilling, 17; total, 25.

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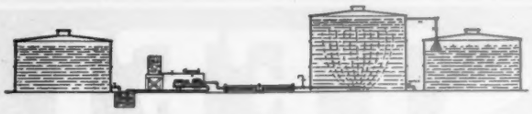

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Government Desires Cooperation of Oil Men in Helium Work

By Rear Admiral W. A. Moffett
Chief, Bureau of Aeronautics, U. S. Navy

Read Before American Petroleum Institute, Fort Worth, Tex., by Lieut. Commander Zeno W. Wicks, U. S. N.

The production of helium on a commercial scale has been forced on the Government in the past and at present; first, by military necessity; second, to develop one or more successful processes by which helium can be obtained for a cost compatible with its use in commercial airships. Within the next year, the Government will have developed or fostered at least two processes which will meet the cost requirement; the Government will have accomplished its mission, a cheap supply of helium; the Government will then look to the great industries of this country to carry on the work and permit it to return to its normal and rational pursuits. On the other hand, the Government must and will have helium. Which of the industries will take it up? There are two which stand out most clearly—the liquefaction industry and the oil and gas industry. Perhaps the solution is a combination of the two. But without the hearty cooperation and initiative of the petroleum industry, there will be no helium. There will devolve on the oil and gas companies the absolute requirement of conservation of helium-bearing natural gas, the furnishing of a steady and sufficient supply of this gas, the cooperation with the liquefaction industry in the extraction of helium, and the consumption of the natural gas after the helium has been extracted.

Asset or Liability?

Helium is truly a byproduct of the helium industry. The question now arises, is it an asset or a liability? The Navy has demonstrated the practicability of helium-filled airships; the Government has developed the processes for the recovery of helium; the Bureau of Aeronautics has developed a water recovery apparatus which overcomes the necessity of valving helium during flight; the Government has forced the design of cheap transportation, the helium tank car, without which the use of helium would be impracticable; American industries are already established for the manufacture of all materials and equipment necessary for the construction and equipment of airships. It is said that the Goodyear-Zeppelin Co. is preparing plans for commercial airships and will commence construction as soon as an adequate supply of helium is assured; the Navy's airship program is in its infancy and should be enlarged in the near future.

From these facts, only one conclusion can be drawn—helium is an asset to the petroleum industry and one of no minor importance.

Airship transportation is assured. Commercial airship transportation along the following routes is entirely practicable:

New York to London via Halifax.
New York to Lisbon via the Azores.
New York to Panama via Porto Rico.
Panama to all points on the West Coast of South America.
New York to the East Coast of South America via Porto Rico and Trinidad.

Further development will take them to the broad expanse of the Pacific, from California to Hawaii; to Guam, to the Philippines, to Asia and Australia.

Commercial Development

And with this commercial development of ships of 5,000,000—6,000,000—8,000,000—and even 10,000,000 cubic feet capacity, the Navy should expand its scouting fleet of airships. In times of national emergency, the whole commercial organization could be concentrated at short notice, giving this country a tremendous advantage over any possible enemy. Such a condition would give a maximum assurance of peace, for superior power is the greatest insurance against aggression.

In order to equip and maintain such a fleet of airships, it is perfectly apparent

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that conservation of helium is a prime requisite. Helium cannot be extracted and stored until required on account of the high cost and large leakage losses. The next best thing is to leave it in the ground in its natural state, until needed. But the best method is to store it in airships in actual operation and conserve the remainder in the ground. A relatively small helium plant can maintain several large airships in operation, but a vast number of large plants would be required for the original inflation and in case of emergency it might be too late to start.

Five million cubic feet of helium in an airship are worth 500,000,000 feet in the ground in time of emergency and it must be put there by the petroleum industry.

The Navy Department has carried on the development of rigid airships in this country not only because they are of value to the national defense as an important adjunct of the fleet for long distance scouting over the water; but also because of the great future of this new means of transportation in the commercial field. Every step in advance that is made in the development of the rigid airship for naval uses is a direct contribution to the progress of the art for commercial purposes. In this great development, and the projects which are closely related to it, such as the conservation of helium, the Navy Department bespeaks the active and sympathetic cooperation of the industrial organizations of which the petroleum industry is one of the leading exponents.

ROYAL DUTCH-SHELL OPERATIONS ON FILM

The Bataafsche Petroleum Maatschappij—one of the principal operating companies of the Royal Dutch-Shell combine claims the credit of having produced the most remarkable film in connection with the petroleum industry. It is a complete picture of the enormous ramifications of the company in the Far East. Its total length easily establishes a record in the art of continuous photography—it is over 14 miles long, and if completely run through the projecting camera would occupy over 24 hours.

The film deals with every phase of the petroleum industry in the East Indies, commencing with maps showing the geographical situation of the chief centers of activity. The work of the geologists in mapping out certain areas was followed by the drilling of oil wells, several of the familiar spouters being shown. The film then proceeds to depict the facilities for piping the crude to the field tanks, and later to the refineries, whose various departments were reproduced. Storages and methods of transport, both in bulk and by cases, were dealt with, while an idea was given of the manner in which the organization looks after the many thousands of its European and native employes.

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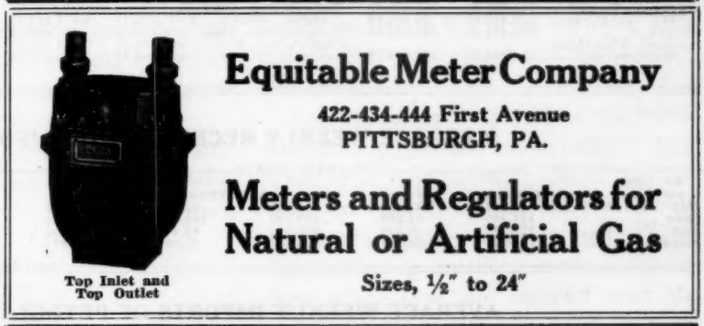
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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE REPORT FOR OCTOBER

Runs

	Month	Dy. Av.
*Prairie P. L. Co.	3,410,000	110,000
Gulf P. L. Co.	1,057,366	34,108
Texas P. L. Co.	482,473	15,564
Magnolia Pet. Co.	1,296,278	41,815
Empire P. L. Co.	858,555	27,695
Cosden P. L. Co.	780,226	25,169
*Sinclair P. L. Co.	1,688,477	54,467
*Other lines	9,052,000	292,000
Total October	18,625,365	600,818
Total September	18,667,071	622,236
Difference	31,706	21,417

Shipments

†Prairie P. L. Co.	3,239,593	104,503
Gulf P. L. Co.	1,119,591	36,116
Texas P. L. Co.	906,597	29,245
Magnolia Pet. Co.	1,170,086	37,745
Empire P. L. Co.	903,016	29,130
Cosden P. L. Co.	840,177	27,102
†Sinclair P. L. Co.	2,251,056	72,615
*Other lines	8,866,000	286,000
Total October	19,296,116	622,456
Total September	17,949,510	598,317
Difference	1,246,606	14,139

Stocks

*Prairie Oil & Gas Co.	26,600,000
*Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line Co. and Gypsy Oil Co.	9,707,279
The Texas Co.	5,887,648
Magnolia Petroleum Co.	9,489,696
Empire Pipe Line Co.	3,118,795
Cosden Pipe Line Co.	2,896,796
*Sinclair Crude Oil Purchasing Co.	29,350,000
Carter Oil Co.	17,774,386
*Other lines	10,600,000
Total October	117,423,510
Total September	117,616,834
Difference	193,324

*Estimated.
†Prairie Pipe Line shipments include shipments of Texas crude oil. Sinclair Pipe Line shipments include Texas and Wyoming
Note: Stocks do not include approximately 9,000,000 bbls. of crude oil held in storage on private tank farms and leases.

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for September and October:

	Sept.'24	Oct.'24
National Transit..	182,088.41	199,575.25
S. W. Pa. P. L...	78,895.56	90,883.89
Eureka P. L.	351,485.53	396,959.58
Buckeye Pipe Line (Macksburg) ...	266,724.36	288,639.76
Buckeye Pipe Line (Cleveland)	14,345.30	15,068.52
Buckeye Pipe Line (Lima, etc.)	137,043.37	145,493.29
Indiana Pipe Line.	13,098.14	13,732.04
Cumberland P. L...	343,759.39	353,376.22
New York Transit	17,950.12	19,341.15
Tide Water P. L...	148,166.41	145,975.11
Pure Oil Pipe Line	189,939.55	193,849.91
Emery Pipe Line..	39,983.11	43,225.22
Indian Refining ...	58,273.83	62,081.48
Paragon Dev.....	39,270.91	37,082.21
Pittsburgh P. L. ..	6,874.72	8,975.04
Total	1,887,898.71	2,014,258.67
Daily average...	62,929.96	64,976.08

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for September and October:

	Sept.'24	Oct.'24
National Transit...	326,398.90	316,814.05
S. W. Pa. P. L....	314,914.21	314,267.16
Eureka Pipe Line..	164,743.30	172,363.77
Buckeye Pipe Line (Macksburg) ...	88,058.06	100,388.72
Buckeye Pipe Line (Cleveland	1,214.51	1,402.46
Buckeye Pipe Line (Lima, etc.)	532,150.39	400,601.13
Indiana Pipe Line..	750,599.95	775,886.48
Cumberland P. L...	132,518.69	121,292.74
Southern P. L.	.....	.....
Crescent Pipe Line.	.....	.....
New York Transit.	437,758.87	521,646.52
Northern Pipe Line	125,166.94	136,838.32
Tide Water P. L..,	125,057.78	156,746.09
Pure Oil Pipe Line.	229,439.68	144,366.46
Emery Pipe Line..	41,884.28	42,307.10
Paragon Refining..	68,348.08	92,965.35
Indian Refining ...	433,576.20	477,162.81
Paragon Dev.	36,936.44	31,059.70
Pittsburgh P. L...	10,978.98	11,164.71
Total	3,819,750.86	3,818,263.62
Daily average ..	127,325.03	123,169.79

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of September and October were as follows:

	Sept.. '24	Oct. '24
National Transit..	961,508.69	1,058,840.27
S. W. Pa. P. L...	724,341.53	699,936.45
Eureka P. L. ...	1,697,079.59	1,884,227.94
Buckeye Pipe Line (Macksburg) ..	352,911.42	407,451.51
Buckeye Pipe Line (Cleveland) ...	46,394.83	53,051.25
Buckeye Pipe Line (Lima, etc.) ..	4,175,978.70	4,474,343.57
Indiana Pipe Line	579,016.62	643,838.15
Cumberland P. L.	605,423.66	623,817.30
Southern P. L...	630,608.67	454,510.66
Crescent P. L. ..	58,433.71	58,247.53
N. Y. Transit ...	763,797.71	799,719.98
Northern P. L. ..	914,613.78	863,572.00
Tide Water P. L.	.....	.....
Pure Oil P. L...	328,576.77	371,999,94
Emery P. L.	6,003.80	7,444.98
Paragon Ref.	79,035.93	90,298.77
Indian Ref.	168,875.27	157,931.51
Paragon Dev. ...	10,287.89	8,649.08
Pittsburgh P. L..	4,047.30	6,180.28
Total 12,206,835.87		12,664,061.12
Increase	.....	457,225.26
Decrease	14,839.68	

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern pipe lines at the close of September and October, showing the gross stocks of the above fields:

	Sept. '24	Oct. '24
Pennsylvania	3,707,179.82	3,930,646.58
Lima	1,317,819.86	1,326,652.80
Kentucky	1,522,433.32	1,482,174.97
Mid-Continent ...	5,592,672.05	5,808,670.66
Illinois	66,730.82	115,916.11
Total 12,206,835.87		12,664,061.12

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1921	1922	1923	1924
January	64,460	67,702	75,790	62,638
February	70,054	75,096	71,093	68,023
March	68,555	78,531	76,592	68,721
April	65,036	75,462	76,614	71,055
May	65,466	77,592	77,365	63,942
June	62,438	76,193	77,593	63,230
July	59,486	76,435	71,879	64,208
August	64,888	79,387	76,910	59,942
September ..	60,110	78,512	72,358	62,930
October	57,688	77,209	76,256	64,976
November ..	58,470	75,313	70,762	.....
December ...	61,000	73,351	69,271	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1921	1922	1923	1924
January ..115,550		119,792	171,067	145,518
February . 96,736		111,362	164,219	148,732
March 84,168		127,753	185,487	147,098
April 101,015		127,068	170,761	147,611
May 100,253		127,840	177,102	134,997
June 105,037		137,638	173,598	143,010
July 97,096		137,872	168,330	124,187
August ...101,652		153,275	142,766	123,120
September 117,440		158,761	137,266	127,325
October ...105,728		165,345	134,597	123,170
November 121,803		165,677	131,426	.....
December 104,023		172,861	139,909	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1922	1923	1924
January ...	16,297,853	14,040,567	12,807,202
February ..	17,009,293	14,028,437	11,844,961
March	16,877,937	13,873,146	10,906,732
April	16,777,842	13,737,575	10,932,742
May	16,948,962	13,815,622	11,335,309
June	16,810,169	14,541,253	11,544,294
July	16,660,286	14,645,584	12,062,361
August	16,235,229	14,770,539	12,221,673
Sept.	16,228,545	14,803,444	12,206,836
October ...	16,757,746	14,504,111	12,664,061
Nov.	15,171,972	14,157,726	.....
December ..	14,323,765	13,444,361	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1932—	Receipts	Shipments	Stocks
October	2,694.23	5,251.51	17,334.79
November	2,980.66	4,150.98	16,164.47
December	2,893.07	3,499.37	15,548.27
1924—			
January	2,942.19	3,641.71	9,343.75
February	3,151.75	1,926.55	10,972.95
March	3,398.73	1,716.38	12,756.43
April	3,311.84	2,066.78	13,991.54
May	3,036.50	5,338.31	10,699.33
June	3,188.51	407.01	13,481.13
July	3,067.74	3,334.29	13,214.58
August	2,901.36	6.21	16,109.73
September	2,794.58	5,775.89	13,128.42
October	3,342.40	1,880.50	14,590.32

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Nov. 1	2,278,684.60
Runs from wells	711,272.69
Other receipts	120,129.83
Regular deliveries	503,672.31
Other deliveries	275,775.55

The amount of Illinois oil run by the Tidewater Pipe Line Co. in October was 30,494.73 bbls., and deliveries were 40,791.56 bbls. Adding these figures to those of the Illinois Pipe Line Co., makes the runs and deliveries from the Illinois Field as follows:

1923—	Runs	Deliveries
October	576,867.09	347,812.83
November	546,859.43	285,652.09
December	534,185.04	282,542.41
1924—		
January	493,337.25	280,792.69
February	535,490.70	353,613.14
March	611,289.36	369,542.51
April	514,356.43	339,546.10
May	751,080.44	510,414.43
June	725,060.87	528,403.38
July	759,646.84	552,386.50
August	720,457.72	519,335.79
September	714,875.36	536,762.98
October	741,767.42	643,863.77

The Tidewater Pipe Co., Ltd., also delivered in October 244,660.26 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 442,197.91 bbls.

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

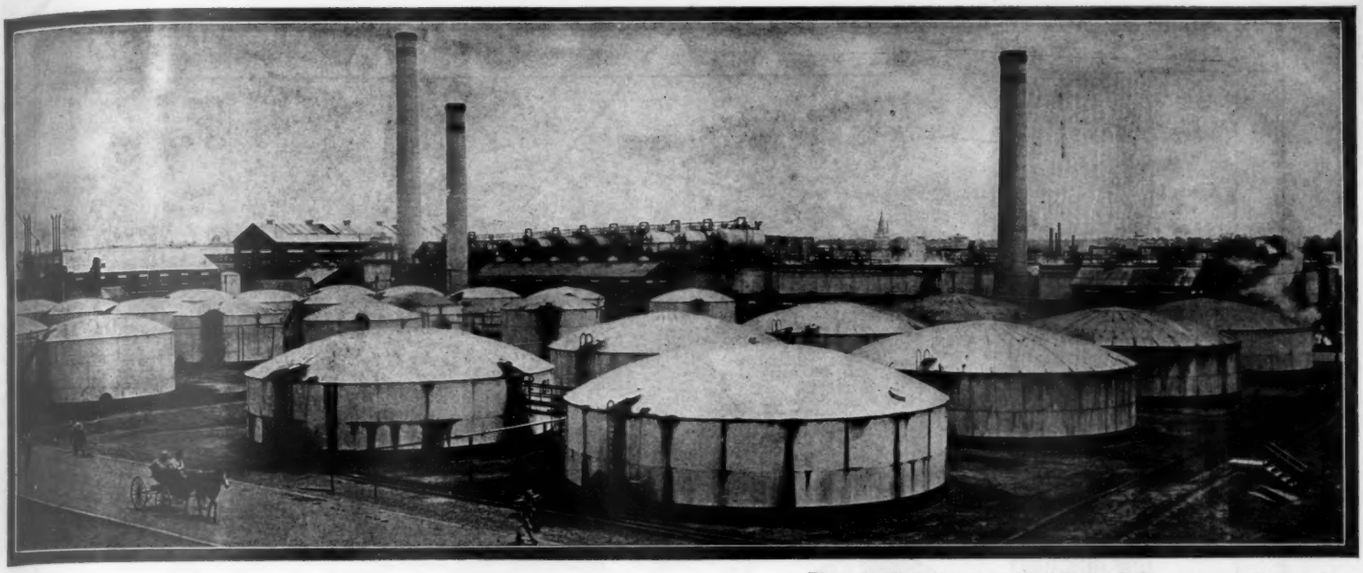
Av. bbls. per wk.—	ATLANTIC PORTS						GULF COAST PORTS					Total All Ports
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	
May	42,903	33,194	615,709	92,706	61,642	846,154	.....	70,127	.....	.....	70,127	916,281
June	121,806	34,300	581,000	103,369	51,331	891,806	.....	.....	.....	.....	.....	891,806
July	37,710	16,129	473,516	84,453	42,463	654,249	.....	16,936	.....	.....	.....	671,185
August	114,022	33,419	654,387	71,806	33,871	907,515	907,515	.....	6,774	.....	.....	914,289

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS						GULF COAST PORTS					Total All Ports
	Baltimore	Boston	New York	Philadelphia	Others	Total	Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	
March	148,358	141,806	283,458	124,642	292,642	990,906	463,806	365,358	223,552	55,545	1,108,261	2,099,167
April	152,369	154,931	913,900	94,962	248,969	971,131	382,900	348,131	119,000	15,869	865,900	1,837,031
May	156,485	134,602	288,903	59,612	300,097	939,699	315,679	295,358	199,591	38,164	848,792	1,788,491
June	120,169	108,731	434,931	68,131	239,400	971,362	412,741	251,762	159,831	32,831	858,166	1,829,537
July	62,097	81,291	445,067	38,418	277,970	904,843	320,194	273,455	130,739	34,973	759,361	1,666,204
August	80,839	57,365	247,710	98,903	207,065	691,872	370,549	238,677	115,839	14,677	739,742	1,431,614

GROSS PRODUCTION AND DAILY AVERAGE IN THE UNITED STATES FOR 12 MONTHS

1923—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming Montana	Other Fields	Total
November:	Month	22,397,848	12,334,620	15,556,507	2,268,840	2,973,000	1,816,860	4,792,466	4,138,464	65,278,605
	Daily average	746,595	411,154	518,550	75,628	99,100	60,662	159,782	104,615	2,175,986
December:	Month	21,899,247	12,232,259	10,065,856	2,345,150	4,017,850	1,919,574	3,304,326	3,147,812	58,932,074
	Daily average	706,427	394,589	324,705	75,650	129,608	61,922	106,591	101,542	1,901,934
1924—										
January:	Month	20,912,500	12,292,833	10,336,643	2,233,878	3,686,680	1,801,175	4,636,239	2,950,500	58,640,428
	Daily average	674,597	396,543	333,449	71,738	118,925	51,651	149,556	95,177	1,891,637
February:	Month	19,341,226	12,236,637	10,495,486	2,112,853	3,302,750	1,497,450	4,168,450	2,997,700	55,152,552
	Daily average	666,939	421,953	361,913	72,857	113,888	51,629	143,740	103,369	1,936,294
March:	Month	19,913,262	13,336,851	12,077,617	2,206,425	3,882,695	1,701,593	3,993,890	3,268,000	60,370,288
	Daily average	642,363	430,221	389,601	71,175	125,248	54,890	128,835	105,097	1,947,431
April:	Month	19,299,849	13,452,240	11,725,830	2,265,090	4,068,225	1,496,582	3,901,755	3,231,000	59,439,571
	Daily average	643,328	448,408	390,861	75,503	135,608	49,853	130,058	107,700	1,981,319
May:	Month	19,833,576	14,248,057	11,923,316	2,486,696	4,659,117	1,596,701	4,033,564	3,365,000	62,136,037
	Daily average	639,793	459,615	384,623	80,216	150,291	51,507	130,109	108,226	2,004,066
June:	Month	18,807,999	14,457,390	11,515,020	2,473,320	4,756,443	1,811,880	3,798,634	3,211,500	60,832,186
	Daily average	626,933	481,913	383,834	82,444	158,548	60,419	126,621	107,050	2,027,739
July:	Month	19,274,755	15,191,860	11,820,889	2,678,834	4,598,160	1,931,641	3,738,525	3,387,990	62,612,654
	Daily average	621,766	490,060	381,319	86,414	148,321	62,311	120,275	109,290	2,019,118
August:	Month	19,112,998	16,572,104	11,805,753	2,717,398	4,400,116	1,898,346	3,816,637	3,280,017	63,603,369
	Daily average	616,548	534,584	380,831	87,658	141,810	61,234	123,117	105,807	2,051,719
September:	Month	18,308,233	16,299,030	10,670,640	2,688,690	4,022,025	1,811,985	3,427,455	3,306,700	60,533,758
	Daily average	610,274	543,301	355,688	89,623	134,068	60,396	114,249	110,190	2,017,792
October:	Month	18,695,565	16,153,604	10,985,315	2,769,819	3,875,558	1,878,941	3,063,810	3,472,031	60,855,643
	Daily average	603,115	521,084	354,365	89,349	125,018	60,611	98,510	112,001	1,964,065
	Total 12 months	237,807,053	168,807,485	135,973,873	29,236,985	48,242,619	20,961,628	46,655,732	38,735,714	729,417,102
	Daily average	649,746	461,223	379,724	79,612	131,810	54,540	127,476	105,803	1,992,940



These distillate storage tanks of Cosden & Company are all painted in light colors. By the use of light-colored paints, oil losses by evaporation are cut to a minimum. In addition, the quality of the oil is kept at a more uniform grade.

Lost—millions of gallons of oil

Producers constantly discover that they take out of storage tanks less oil than they put in. How can they reduce this loss?

ACCORDING to a government report, one-thirtieth of the country's production of gasoline is lost through evaporation in one stage only of handling crude oil.

It is estimated that in 1919 this loss amounted to 122,000,000 gallons in the mid-continent field alone.

Losses through evaporation are particularly costly, since the most valuable part of the oil escapes — the gasoline. As the big losses occur during the few days in which the oil is stored on the leases, it is evident that the problem lies largely with the tanks. Keep them cooler and the losses will be materially reduced. That can be done by painting the tanks white or in light colors, thus reducing heat absorption.

Tests conducted by the U. S. Bureau of Mines show the value of painting storage tanks white or in light colors. It was determined that the temperature of oil in white-painted tanks was always from eight to ten degrees cooler than the temperature of oil in dark-colored tanks. Evaporation loss was therefore cut to a minimum in the white tanks.

You not only save oil by painting your tanks white or in light colors. You also insure the quality of the oil in the tanks. As evaporation removes the most volatile part of the oil—the gasoline—it lowers the grade of your product. Light-colored paint, by reducing evaporation, enables you to take out of your tanks a better grade of oil.

Added to the saving in oil is the saving of the tanks themselves. Producers and refiners who get this double protection in the fullest measure paint their tanks and save the steel surfaces with Dutch Boy white-lead and Dutch Boy red-lead.

For the undercoats next to the metal Dutch Boy red-lead is the paint to use. This is a rust-resisting paint that is used on iron and steel everywhere—a positive guaranty against rust. Then heat-resisting finishing coats of Dutch Boy white-lead are applied over the red-lead undercoats.

This combination of Dutch Boy red-lead and Dutch Boy white-lead forms a paint film that not only reflects the hot rays of the sun but also resists all attacks of the rust-forming elements, air and moisture. Both these paints are easy to apply and have unusual spreading power. Add these qualities to extreme durability and you have a paint film that is economical and one that cuts down storage-tank maintenance.

Our nearest branch will be glad to give you complete information about Dutch Boy red-lead and Dutch Boy white-lead protective paint coverings for your tanks and other metal equipment. Write today for this helpful advice, which may save many gallons of oil for every tank you operate.

Litharge

For oil refining you want litharge of correct physical character and extreme chemical purity. Our nearest warehouse can give you quick shipment of such litharge in any quantity you desire.

At all times you can rely on its unvarying uniformity, for it is made by the makers of Dutch Boy white-lead and Dutch Boy red-lead.

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The Old and New in Japan

In the foreground are several native hand-dug wells covered with thatch. It took three years to dig each of these wells and their average depth is about 300 feet. However, Japan is now on the move, for in the background are wells drilled with modern American equipment.

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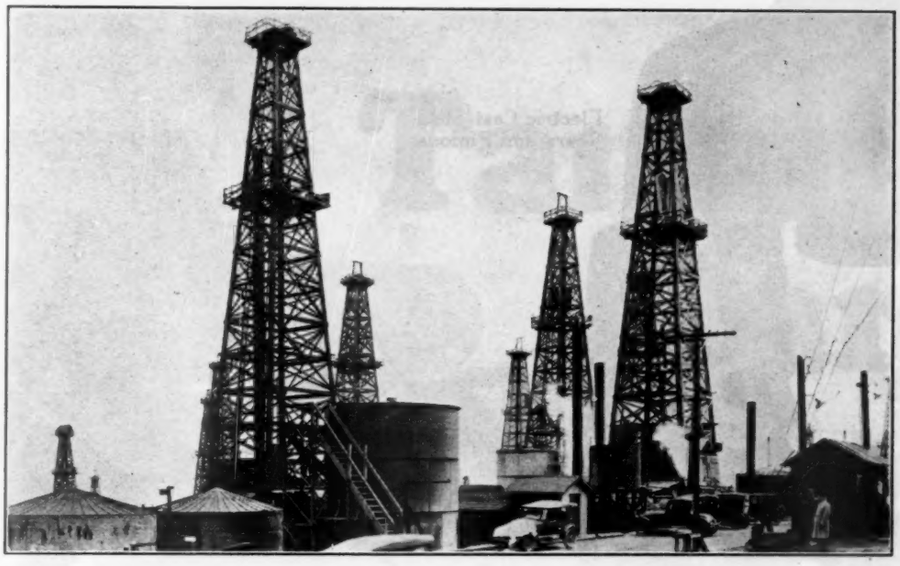

The Wells on the Bartholomoe Oil Corp. Lease, Signal Hill, Long Beach, Calif., are among those that have Chester Steel Casing.

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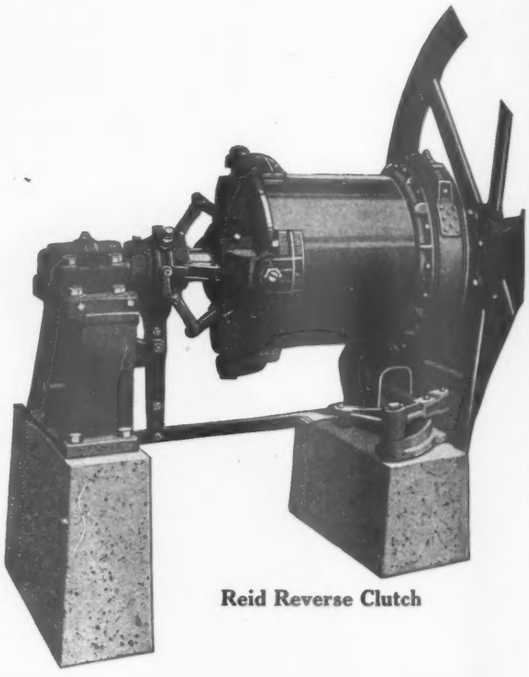

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That the tough, close-grained Ohio electric steel stands this strain and wear is evidenced by the fact that the Joseph Reid Gas Engine Company has used many carloads during the last seventeen years. All were of uniform size and weight and with well-formed teeth like the ones shown above.

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Springfield, Ohio

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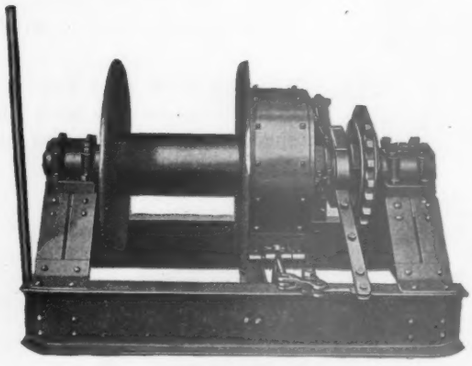
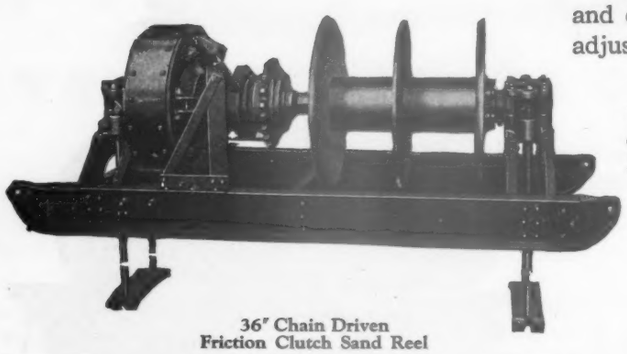


26″ Friction Clutch
Chain Driven Bailer



36″ Chain Driven
Friction Clutch Sand Reel

And perfect working of these Machines means economy wherever they are used.

Economy of time because the bailing operation is speeded up to an almost unbelievable degree.

Economy of materials as there is no contact with or wear on the Band Wheel.

No damage to belt, and sand line is safely stored and protected.

Economy of human exertion because there is no necessity for the operator to spend all his strength in maintaining friction between Sand Reel and Band Wheel, nor does he have to contend with the usual jars and jolts.

The line includes a size and type for both Rotary and Cable Tool work and for depths of from 500 to over 3000 feet.

Installation is simple and operation is easy and does not require constant attention and adjustment.

Let us tell you more regarding these perfected, durable, efficient and above all—economical Machines.

Ask for Booklet "Cut Your Bailing Time in Half"

The PARKERSBURG RIG & REEL COMPANY

Main Office and Works, Parkersburg, W. Va. ***New York Office,*** 30 Church St.

California Representatives, BUCK & STODDARD
485 California St., San Francisco, Calif.; Box 720, Arcade Station, Los Angeles, Calif.

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WICO

Announces

A Perfected Centralized Service

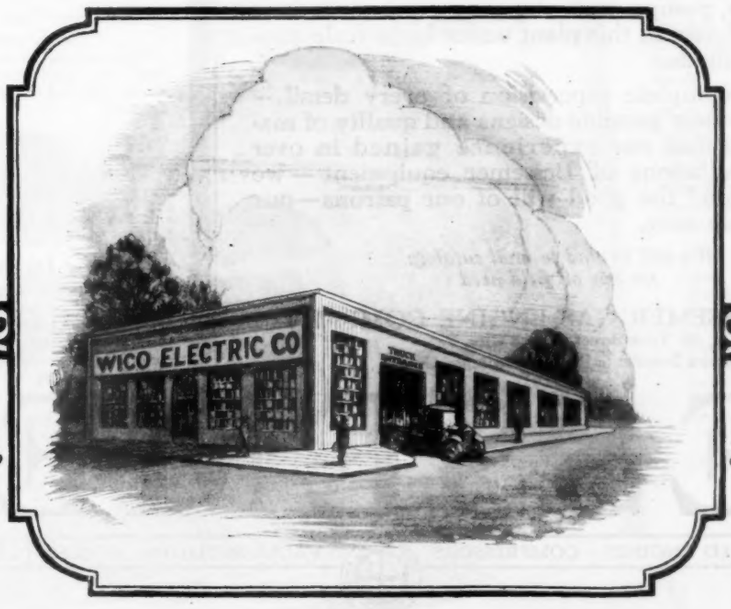
The biggest thing ever done by any ignition manufacturer to render immediate replacement service.

A careful survey of the Mid-Continent Oil Fields has convinced us that the majority of service stations cannot possibly give the high type of service which we would give if we were on the job.

After an intensive study of the situation we have decided to inaugurate a centralized service, so far reaching as to eliminate costly delays and assure a two day service to practically all parts of the Mid-Continent Fields.

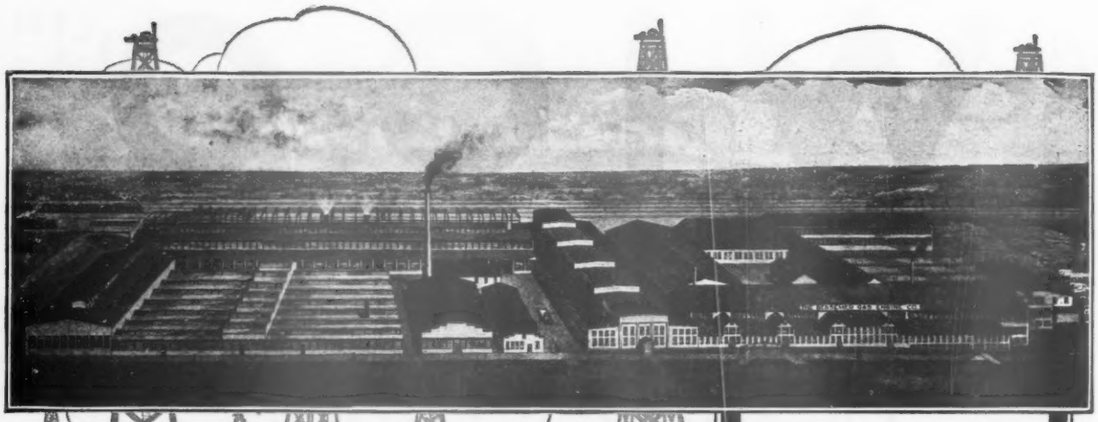
Here is the plan—in the event of a breakdown of a WICO MAGNETO, a telegram, phone call or any other means of communication to our branch at Tulsa, will start a complete new magneto immediately to the scene of the trouble. You ship the old magneto to Tulsa. We will repair or rebuild it and simply charge you for the actual cost of such repairs—you have a new Magneto. No charge will exceed $6.00 regardless of condition of the magneto you send in, providing that such damage is due to wear and tear.

The Wico Branch at Tulsa is factory equipped with adequate facilities to take care of all demands. Get in touch with us immediately that any trouble arises.



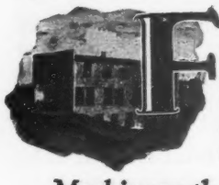
THE WICO ELECTRIC CO. SPRINGFIELD, MASS. U.S.A.

BRANCH AT TULSA



Ef we're agoin' to prove we be growed up
'Twunt be by barkin' like a tarrier pup,
But turnin' to an' making things es good
Es wut we're ollers braggin' that we could.
—James Russell Lowell

America's Greatest Gas Engine Plant—The Bessemer



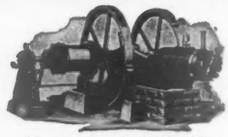
FROM the little factory in 1900 to the greatest gas engine plant in America in 1924. Such growth could not have been made without the enduring confidence of the many patrons of this company.

Machinery that meets every oil field need is produced in the Bessemer plant. Gas engines, oil engines, compressors, pumps, and pumping powers—each is made completely in this plant under large scale production methods.

Without complete supervision of every detail,—without the best possible designs and quality of materials,—without our experience gained in over 31,000 installations of Bessemer equipment—we could not hold the good will of our patrons—our most valuable asset.

We will be glad to mail catalogs for any oil field need

THE BESSEMER GAS ENGINE COMPANY
52 York Street, Grove City, Pa.
Service Branches in Principal Production Centers



Bessemer Oil Field Engine
Famous in deep oil territory the world over. The original two-cycle engine with crosshead construction.

Bessemer Type O. D. Oil Engine
Operates on either oil or gas to meet any oil field need. Enclosed crank case and other mechanical features.

Bessemer Direct-Driven Compressor-Type VIII.
Standard equipment in the gasoline-from-gas-industry. Combining engine and compressor in one unit, saves space, belting and foundation costs.

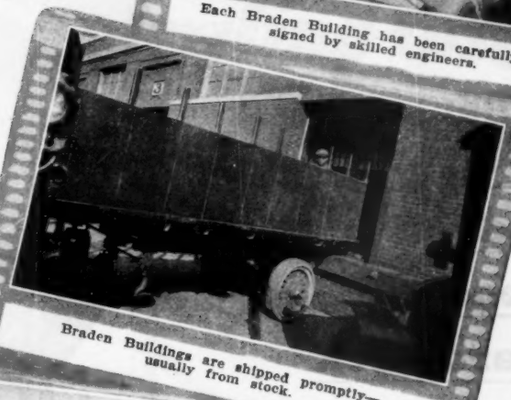
BESSEMER

BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

Note the *Simplicity* and *Efficiency* of Braden "E-Z-Bilt" Buildings

(Designed Especially for Oil Industry Uses)

Each Braden Building has been carefully designed by skilled engineers.



Braden Buildings are shipped promptly—usually from stock.

Parts are clearly marked and perfectly fitted. No skilled labor required.

Braden Buildings are substantial, fire-proof, lasting.

And yet they are easily disassembled and moved when necessary.

Oil Country Specialists

When you order a Braden "E-Z-BILT" Building, all your worries about design, delivery, labor and erection are over.

You know that Braden Buildings are well designed because the Braden organization has devoted years of study to the subject of oil-country buildings.

You are sure of prompt delivery because under ordinary circumstances Braden Buildings are shipped from stock.

Skilled labor doesn't worry you because none is required. Thanks to clear marking and careful shop workmanship, the most inexperienced roustabout is able to assemble and erect "E-Z-BILT" structures without trouble.

And the same inexperienced labor is able to *disassemble* Braden Building when it is desired to move them.

You can't beat Braden Buildings for oil-country purposes. Let us send you further details on your requirements.

THE BRADEN COMPANY
Tulsa, Okla.

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TRADE E-Z-BILT MARK

Braden "E-Z-Bilt" Buildings

REED ROLLER BIT COMPANY
"The Bit with the Bite"

Leaves no junk in the hole

Strong,
Safe,
Speedy,
Dependable
in Hard Rock

Reed Bits

have demonstrated superiority of performance in the field! • • • •

The illustration in itself is almost conclusive evidence of the Reed Roller Bit. Its strength is apparent; its SAFETY is indicated by the safely interlocked parts which cannot come off in the hole; its SPEED is evidenced by bithead cutting surface with cutters revolving on separate bearing centers and attacking the rock at various angles; its DEPENDABILITY is still further enhanced by the advantages of slush for lubrication instead of oil—no sand or grit to grind out bearings and no useless trips in and out of the hole to refill oil chambers.

"SLUSH LUBRICATION" is only possible with the Reed Roller Bit because of its peculiar inner-channel design in both bithead and reamer. Slush is pumped through the openings full force, kepping cutters and bearings free and easy rolling.

"Reed Service Means Now"

Reed Roller Bit Co.

HOUSTON, TEXAS, U. S. A.

CALIFORNIA OFFICE: 1341 Santa Fe Avenue, Los Angeles. Phone Tucker 2785. Ask for Mr. E. B. Wiggins.

For Low Hauling Costs

Not This

Athey Wagons operate with low hauling costs where ordinary wagons find the going almost impossible.

One user writes that with Athey Wagons, he can haul 76% more tonnage with less strain on his teams. Another writes that he can haul more with 6 Athey Wagons than he can with 10 ordinary wagons. Another concern kept accurate cost records and found they gained over $7,000.00 a year in lower maintenance and increased deliveries by using Athey Wagons. (These names gladly furnished on request.)

An Athey Wagon makes its own road, 4¼ square feet of the broad track band are always in contact with the ground. Regardless of road conditions, this band provides a smooth, never-ending steel highway over which travel the wheels that carry the load.

Non-miring. Will carry 10-ton capacity loads wherever animals or tractors can work. Further information gladly sent.

ATHEY TRUSS WHEEL COMPANY
130 N. Wells St., Chicago, U. S. A.
Cable Address: "Trusswheel, Chicago"
The Baldwin Locomotive Works, Export Agents, Philadelphia, Pa.

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But This

ATHEY TRUSS WHEEL WAGON

IT BRIDGES THE SOFT SPOTS

When you crack Gas Oil, the more Gas Oil you have left from the products of the operation, *once through*, the greater the burden of the operating cost on that portion of the Gas Oil which is actually converted into gasoline

When you crack Gas Oil and degrade a good portion into Fuel Oil you do so at a loss

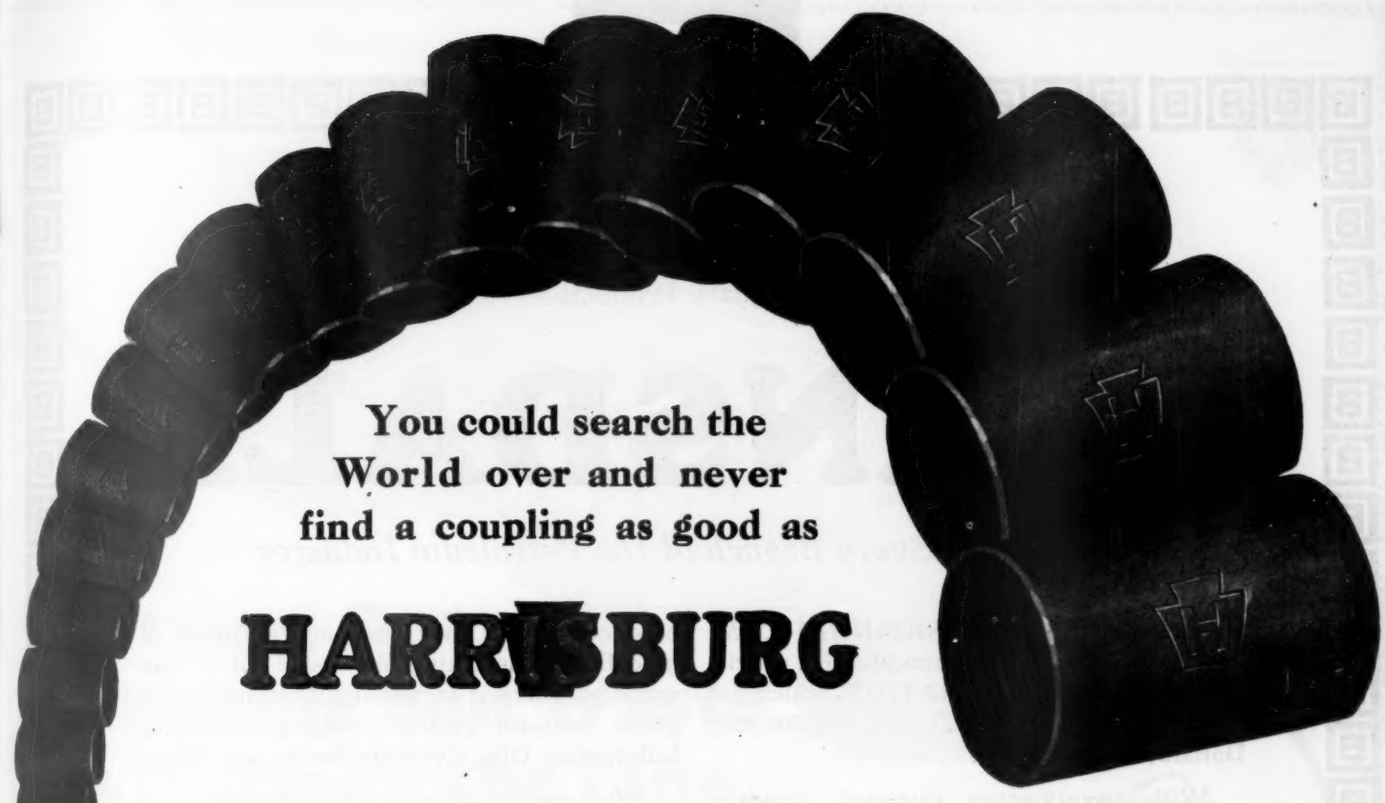
Either way you face the old skimming plant problem of the gasoline carrying the whole burden and when the gasoline produced is only 30% of the original charge it is not enough to carry the load

When you crack Fuel Oil and produce only gasoline, stove distillate and Gas Oil, all of greater value than the Fuel Oil charging stock, you have a profit on all products made

This is only possible by the non-residuum runs using Fuel Oil as charging stock and non-residuum runs are only possible with the Dubbs Process

You can also make non-residuum runs with the Dubbs Process using Gas Oil as charging stock if you wish, but the lower the cost of the charging stock the larger your profit on the gasoline produced

Universal Oil Products Company
Owners of the Dubbs Process
312 South Michigan Ave
Chicago Illinois



You could search the World over and never find a coupling as good as

HARRISBURG

IF the foreman in the Pennsylvania fields swapped tales with the "pushers" of Texas, you would find them agreeing on one subject at least—that of Harrisburg Couplings. When a driller gets hold of a coupling that will take his string down to pay sand in well after well, with less labor and delay, he is likely to brag about it, even though he *expects* unusual service from "Harrisburg."

Harrisburg Forged Seamless Steel Couplings have no weld—no weakness. No piping to develop leaks—freedom from galling or stripping. Not a crack nor a break to hold up a costly drill crew. And the special forged seamless oil field steel which gives Harrisburg Double Strength—is always uniform.

Stocked and sold by leading supply houses.

HARRISBURG PIPE & PIPE BENDING CO.
Harrisburg, Pa.

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HARRISBURG
Forged Seamless Steel Couplings

"Be Square Products"

BARNSDALL

Engaged in Every Branch of the Petroleum Industry

The BARNSDALL REFINING COMPANY is one of the subsidiaries of the BARNSDALL CORPORATION, which has assets of over Forty Million ($40,000,000) Dollars;

With twenty-seven thousand domestic gas customers in twenty-eight municipalities in the states of New York and Pennsylvania;

With approximately 300,000 acres of oil and gas leases extending from Pennsylvania to California—with only ninety thousand acres operated and developed, upon which there are twenty-six hundred oil wells producing more than seven thousand barrels of crude oil daily and six hundred twenty-five gas wells, and six hundred miles of pipe lines;

With a fully equipped, complete, modern refinery located at Barnsdall, Oklahoma, in the heart of the corporation's mid-continent production, with over one hundred miles of pipe line transporting the crude oil to the refinery, where it is manufactured into high grade, uniform quality products, including Lubricating Oils, Cylinder Stocks and Wax;

With twelve absorption gasoline plants to extract the natural gasoline from the casing head gas of the producing oil wells and a fleet of steel tank cars for shipping and transporting all of its refined oils to market;

With an export department constantly preparing shipments of Barnsdall Products for export to European countries and South America, through the ports of New Orleans and Mobile;

With a large warehouse and storage plant in Kansas City, Mo., with distributing stations well located in the agricultural country of Missouri and Kansas.

Our Own Crude
Our Own Refinery
Our Own Pipe Lines
Our Own Tank Cars

"A Dependable Source Supply"

Barnsdall Refining Company

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Producing

By Invitation Member

Conveying

Refining

Cutting Out Trouble and Waste All Along the Line

Simplicity of design, few moving parts and those interchangeable, combined with sturdy construction give Darling Gate Valves those EXTRA years of trouble-free service necessary for real economic production.

Ribs, arms, or devices to guide the parts or to keep them from separating in the operation of the valve, are not needed or used in Darling Gate Valves. Nor are there any corners or pockets to catch scale or sediment to interfere with the easy and positive action for which Darlings are famous.

Revolving Discs seat at a different place each time the valve is closed, insuring uniform wear and long life. Although Darlings seldom ever need attention they are the easiest repaired in the field.

On your next installation it will pay you to specify Darlings.

DARLING VALVE & MANUFACTURING CO.
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DARLING GATE VALVES

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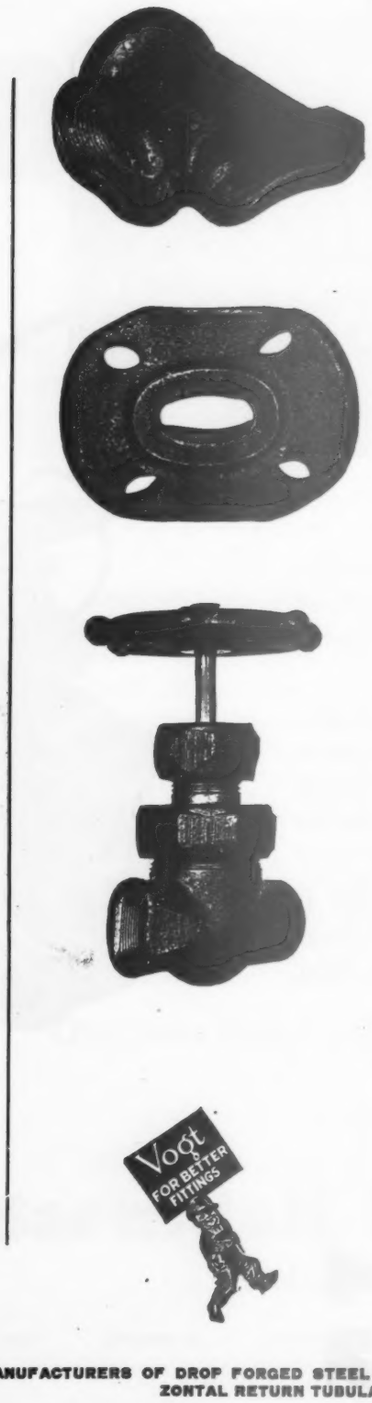
Proving a surplus of strength



SMASHED cold by the powerful blows of a 5000-pound steam hammer —without developing cracks or any other defects. This most severe test proves that Vogt Drop Forged Steel Valves and Fittings have a surplus of strength — strength in excess of that required for any possible service.

Examine carefully the unretouched photographs of the tee, flange and union bonnet valve, and note particularly that even the threads did not fail.

Vogt

DROP FORGED STEEL VALVES AND FITTINGS

Their surplus strength is insurance against failure in most severe service and the resulting loss of property and even life.

Vogt Drop Forged Steel Valves have working pressures to 6000 pounds per square inch, and fittings have working pressures as high as 10,000 pounds. Those designed for high temperatures are used successfully to 1100 degrees F. Valves are steel trimmed or monel metal trimmed according to service requirements.

Globe, angle and check valve sizes are from ¼ to 2 inches, gate valves from 1 to 6 inches, fittings from ¼ to 4 inches and companion flange sizes from ¼ to 8 inches inclusive.

Detailed information regarding these and the many other items that make up the line of Vogt Drop Forged Steel Valves and Fittings is contained in the new catalog now on the press. Write for a copy.

Henry Vogt Machine Co.
INCORPORATED
LOUISVILLE, KENTUCKY

BRANCH OFFICES
NEW YORK, CHICAGO, PHILADELPHIA, DALLAS

MANUFACTURERS OF DROP FORGED STEEL VALVES AND FITTINGS, OIL REFINERY EQUIPMENT, WATER TUBE AND HORIZONTAL RETURN TUBULAR BOILERS, ICE MAKING AND REFRIGERATING MACHINERY

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